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PARKS

AN INTERNATIONAL JOURNAL FOR MANAGERS OF NATIONAL PARKS, HISTORIC SITES, AND OTHER PROTECTED AREAS

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Cover: Canoeing on Emerald Lake, Yoho National Park, British Columbia. Photo: Ted Grant, Parks Canada.

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Jeremy Grimsdell

The Ecological Survey

Experience in Africa offers guidance for management in other areas

An eminent British ecologist, Charles Elton, has written "An ecological survey is not just a catalogue of the biological properties of individual species or a list of species, or a series of censuses. It is, or is heading towards, a synthesis that will describe not only the parts of a complex system but the interaction and balance between them, and the dynamic properties of the system as a whole." (in Elton, 1966).

Elton's definition describes the ideal goal of the ecological survey, one that is rarely approached in practice. But if such synthesis can be carried out, then it may be possible to make reasonably accurate predictions as to how the animal and plant populations will change if the system is altered in some way. Such prediction forms the basis of good land management, with answers to such questions as "what will happen when we do this or that to the environment?"

However, because of limitations of time and money in the operation of most national parks and reserves, normally it is not possible to perform an ideal ecological survey in which the complete system is studied and understood. In practice, ecological surveys tend to be oriented towards some specific aim or to understand an occurring problem, and not that of understanding the whole system. Here are some examples of usual survey reasons:

1) To prepare a management or land-use plan.

2) To recommend boundaries, or modifications to boundaries, of a conservation area.

3) To investigate or monitor the status of an endangered animal, plant, or habitat.

4)To assess the status of problem species that are affecting certain habitats.

5) To assess the suitability for the introduction of particular animals or plants.*

6) To advise on harvesting or culling rates for a particular species.**

A fundamental problem connected with ecological surveys is concerned with the objectives of the park or reserve area in question. Often these objectives are not clearly stated, or not stated at all, which leads to confusion as to the aim of the survey. Sometimes, of course, these objectives depend on the results of the survey. It is logical, however, that a management plan be formulated as soon as sufficient information is at hand.

I think this must be regarded as a crucial step and I would suggest that the chief aim of the initial ecological survey should be to prepare a management plan. Such a plan may be divided into a descriptive section, which gives an account of the environment, and a prescriptive section which lays out a plan of action depending on certain established objectives. Clearly, the prescriptive section has to be flexible and subject to alteration as new information becomes available, or if some unexpected change takes place.

In Africa, or elsewhere for that matter, few parks or other conservation areas have received an ecological survey aimed at producing a management plan. There are some examples, however, such as the Ngorongoro Conservation Area in Tanzania, the Luangwa Valley in Zambia and the Okavango Delta in Botswana. These examples are areas of multiple land-use (including wildlife) and clearly need a management plan in order to resolve land-use conflicts. Some national parks and game reserves have management plans, and the Wildlife Department of Zambia may be mentioned as having made considerable progress in this respect.

In parks and reserves, one system of management is no action at all, that is "to let nature take its course"; but this has to be clearly stated with the reasons given for following this plan. However, in the absence of a plan (and this is the usual case) I believe that the objective of the park or reserve should be to maintain, or even increase, natural ecological diversity. In this way all options for the future are kept open. The key to this objective is the successful maintenance of the available habitats, on which the animal species depend for food and shelter. Certain habitats may disappear owing to climate or hydrological change beyond human control, but in other cases habitats can be maintained or improved by judicious management; for instance, by the use and control of fire or of large mammals, the elephant being a good example. Management of this kind should be based on research findings from surveys designed to yield such information.

Priorities of the ecological survey

This leads us to the question of which data to collect and why. Assuming that the object of the initial survey is to prepare a management plan for habitat conservation, then the research priorities should probably be as follows:

1) Research of the literature and collection of existing information on the area in question.

2) A classification of vegetation and the preparation of a habitat

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* If preservation of an area in its pristine form is an objective, introduction of any exotic or non-native plant or animal should be forbidden.—Ed.

** Criteria for selection of protected areas that are to be included in the United Nations List of National Parks and Equivalent Reserves (published by the International Union for Conservation of Nature and Natural Resources, 1110 Morges, Switzerland) forbid the exploitation of natural resources. This would certainly include hunting or any commercial harvest of animals. However, the criteria does permit management activities for the purpose of maintaining the desired flora and fauna, and these "may include the removal of animals by shooting or capturing to maintain population levels, the removal of undesirable vegetation, and the use of controlled burning or grazing to maintain particular plant communities."—Ed.

Carefully written master plans, which set forth the objectives of national parks and guides for resource protection, management, interpretation and development, should be based on thorough understanding of physical and biological resources, and their interactions. Ecological surveys are essential in the preparation of master plans, and in monitoring the effects of their operation.

map, followed by an assessment of the factors which may be responsible for habitat change.

3) Collection and analysis of climatic and hydrological records.

4) Collection of data on the extent and frequency of burning, both natural and man-caused (if applicable).

5) Collection of data on the distribution and abundance, past and present, of the major animal species, particular emphasis being given to those that seem to have a significant impact on the ecology of the area, i.e., species of special "ecological importance."

6) Collection of data on human settlement, numbers and trends both within the area (if applicable) and for the surrounding area, preferably for the whole region in which the conservation area lies. It is important to include this aspect in the survey, as human influences often have considerable impact on the ecology of park, reserve or other conservation area. These influences include hunting or poaching, cutting and burning of vegetation, land development, raising of domestic stock and the diseases of domestic animals.

This would seem to be suitable framework for the initial ecological survey. Some mention of methodology is made later on.

Resources for the survey

To be of any value, an ecological survey should be run for a reasonable length of time—say, a minimum of two to three years—and be conducted by suitably trained scientists. If the survey area is large then an aircraft will be needed, so the expense may be quite high.

In Africa, ecological surveys have been carried out by various types of organizations, of which three are:

1) By an international aid body, such as the Food and Agriculture Organization of the United Nations, or the Canadian International Development Authority, which supplies both equipment and personnel but with contributions from the host country.

2) By the government or semi-government department concerned, usually the Wildlife or National Parks Departments, sometimes aided by outside financial support.

3) By a private consultant firm.

In my experience an ideal arrangement is as follows: a small team of two or three scientists who complement each other in their various trainings; who have adequate equipment and finance without excessive constraints; and who have full government backing and support, but who are not working directly under the government. It must be noted, however, that too much freedom from supervision can lead to problems.

These conditions usually can be met by a semi-government organization with independent financial support from an outside donor.

Planning the survey

In planning an ecological survey it is important that the methods of analysis are known before the data are collected, so that the data can be collected in a form that helps subsequent analysis. Some preliminary sampling is necessary to establish precisely which data to collect and at what intensity in order to give the required level of accuracy.

An example is the systematic survey (to be mentioned below) which is a powerful method of collecting data on animal numbers and distributions in relation to resources and habitats. Large amounts of data are amassed which need to be subjected to some form of multivariate statistical analysis. This will make it desirable to order the data in a way that facilitates computer analysis.

Care has then to be taken to interpret the results in a meaningful way. For instance, a high degree of correlation between certain variables does not necessarily mean that there is a causal relationship.

If sufficient data of the right kind are collected, it may be possible to construct crude simulation models which attempt to mimic the dynamics of the system, or part of the system. The models must be viewed very critically for they seldom give accurate predictions for complex biological systems. This is because they are often incomplete in some way, certain important data or relationships having been omitted. Perhaps the real value of simulation models is to identify sensitive areas in the model where more information is needed.

Methods of data collection

In an article as short as this only the briefest mention of techniques can be made.

As regards habitat classification and mapping, various methods have been proposed usually based on vegetation structure (Elton, 1966); but it must be appreciated that vegetation is a dynamic entity, so an indication of potential vegetation or site potential is needed (see Pratt *et al*, 1966). In order to meet these requirements, a more comprehensive system is given by the methods of landscape

classification, which is based on geomorphology, soils, climate, and vegetation (Astle *et al,* 1969).

Maps of habitats can be quickly made by annotating airphoto mosaics from a light aircraft, or by using "Landsat" satellite data (Craighead, 1976). These methods are especially useful for large, remote areas. Likewise, "Landsat" images, which are available back to 1972, can be used for mapping burned areas.

Rates of habitat change can be measured using air or ground surveys. An example of the former is the use of aerial photographic transects (Laws *et al,* 1975), and an example of the latter is the Point-Centred-Quarter method as used for woody vegetation (Croze, 1974).

Concerning animal numbers and distribution, methods of measuring these have improved greatly in recent years, and simplified handbooks on the subject are given by Norton-Griffiths (1975) and by Western (1976). An efficient means of obtaining information on one or more species is by systematic sampling, in which data on numbers, distributions and resources (e.g., grass condition, water) can be collected simultaneously. For large areas, these surveys are conducted from a low-flying light aircraft; but for small areas ground surveys (by vehicle or on foot) are preferable, as they can give more detailed information than is possible to collect from an aircraft. This type of survey has been carried out successfully in several African conservation areas, notably in the Serengeti ecosystem in Tanzania, the Amboseli and Tsavo ecosystems in Kenya, and the Okavango Delta in Botswana.

There are two important requirements for the systematic survey: (a) it should cover a reasonably large area, probably greater than the conservation area itself, preferably including the whole ecosystem or unit which the animals use, and (b) it should be repeated over several seasons to give an indication of the variation of animal distributions in relation to resources and habitats.

Finally, on the question of human settlement and numbers, it will often be possible to obtain information on density levels and trends around conservation areas from national census data. If these data are inadequate, then it will be necessary to conduct surveys to obtain the data, some of which can be gathered during the systematic survey. Settlement trends can be traced from previous aerial photographs of the area and estimates of population size can be obtained from counts of houses, made for example from low-level aerial photos (Grimsdell & Bell, 1975).

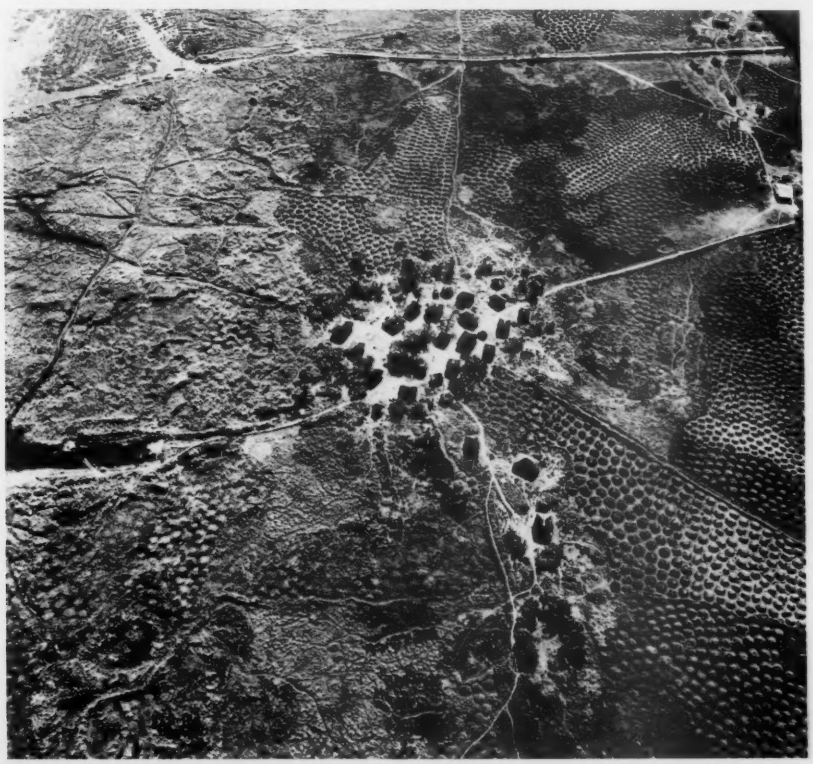
Presentation of results

After completion of the initial ecological survey the results should be made available in two forms: first, a scientific report which attempts to integrate all the data collected; and second, a simplified version in a management plan format, which conveys the principal results and puts forward management proposals. The latter presentation will be most useful for administrators, park wardens and management personnel.

Implementation of management actions based on research findings

In certain African conservation areas, I have been struck by the lack of consistent management action, and I think there are several reasons for this.

1) There is no management plan and/or area objectives.
2) No active management is considered necessary.
3) Positive action is not undertaken owing to insufficient knowledge of the area's ecology.
4) Insufficient staff, funds or expertise are available to carry out the recommendations.
5) Lack of continuity of wardens and management staff.
6) Confusion as to who is to carry out the recommended action.



A village in the Bangweulu swamps of Zambia. House counts made from such aerial photographs can provide data on population numbers and settlement trends. Note the cassava cultivation around the houses. Photo by the author.

Careful and systematic watch should be kept on areas which are subject to abnormal impacts by people, animals, or other influences such as cyclic drouth, flooding, or fires. Elephants alone can and often do cause widespread ecological changes. In such areas, on-going ecological monitoring is essential for good management.

Bearing some of these points in mind, the management proposals should be realistic and within the capabilities of the organization concerned. As to who is to carry them out, they are probably best done by a research and management division or specialists connected to a monitoring service within the national organization having jurisdiction. In some cases, a private company may have to be called in to do the job; for example, to do elephant reduction cropping (see Laws *et al,* 1975).

Ecological monitoring to check the effectiveness of management actions

One of the aims of ecological monitoring is to see whether management is having the desired effect; for instance, if an early burning program or an elephant reduction scheme is resulting in improvement of certain woody habitats. But apart from this, a monitoring program will give information on the status and trends of the major animal and plant communities; it can give warning of undesirable trends and may be able to indicate the causes.

For Tanzania's National Parks, it has been recommended that all the Parks should have a monitoring service responsible for keeping a continuous check on ecological changes, and also to conduct research on major ecological problems of each Park. (Russell, 1968).

Such a program has been set up in the Serengeti National Park, funded by the African Wildlife Leadership Foundation. This program collects information on climate, vegetation change, burning, animal numbers and distributions, and human settlement. In effect, it is a continuation of the ecological survey on a long term basis.

Ecological surveys for parks and reserves, then, can have two major forms: the initial survey to draw up a management plan, and a protracted form—called a monitoring program—to follow long term changes and to guide management.

References

Astle, W.L., Webster, R. & Lawrance, C.J. 1969. Land Classification for management planning in the Luangwa Valley of Zambia. *J. appl. Ecol.* 6: 143–169.

Craighead, J. 1976. Studying grizzly habitat by satellite. *National Geographic* 150(1): 148–158.

Croze, H. 1974. The Seronera bull problem. II. The trees. *E.Afr. Wildl. J.* 12: 29–47.

Elton, C.S. 1966. *The pattern of animal communities.* London: Methuen.

Grimsdell, J.J.R. & Bell, R.H.V. 1975. *Ecology of the black lechwe in the Bangweulu basin of Zambia.* Lusaka: National Council for Scientific Research. (P.O. Box CH 158, Lusaka, Zambia).

Laws, R.M., Parker, I.S.C. & Johnstone, R.C.B. 1975. *Elephants and their habitats.* Oxford: Clarendon Press.

Norton-Griffiths, M. 1975. *Counting animals.* Nairobi: African Wildlife Leadership Foundation. (P.O. Box 48177, Nairobi, Kenya).

Pratt, D.J., Greenway, P.J. & Gwynne, M.D. 1966. A classification of East African rangeland, with an appendix on terminology. *J. appl. Ecol.* 3: 369–382.

Russell, C.M.G. 1968. *Management policy in the Tanzania National Parks.* Arusha: Tanzania National Parks. (P.O. Box 3134, Arusha, Tanzania).

Western, D. 1976. The distribution of animals in relation to resources. Nairobi: African Wildlife Leadership Foundation. (P.O. Box 48177, Nairobi, Kenya).

Dr. Jeremy Grimsdell is a scientist working with the Serengeti Ecological Monitoring Program, Serengeti Research Institute, P.O. Seronera, via Arusha, Tanzania

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Editor's note: Dr. Grimsdell mentions several possible sources for expert assistance (see text following the subheading "Resources for the Survey", p. 2) that could be contacted when the park organization does not have qualified professional personnel on its staff.

As a first step, help should be sought from official governmental sources and the conservation departments of universities in the country concerned.

Possible international sources through which expert assistance might be obtained are listed in the report on Session XIV, "Help," in the proceedings of the Second World Conference on National Parks, *published by the International Union for Conservation of Nature and Natural Resources (IUCN), Morges, Switzerland, 1974.*

The loan of expert personnel or other forms of assistance from countries having large national park services or similar governmental organizations also could be explored.

Theo. S. Burrell

The Peak District Structure Plan

A plan to conserve a European Heritage Landscape

In a place as densely populated as England, it is not surprising that there are few areas of true wilderness. In fact the British Nature Conservancy Council does protect and manage nature reserves of special national importance, largely in their wild state, but as most land has been husbanded or developed for so long in England the proportion of the total land area with pure ecosystems cannot be as large as in a less densely populated nation. Yet our industrialized country has perhaps an even greater need for conservation if the total land area is to be used wisely. Nature needs such protection over a reasonably wide area not only for its own sake and for future generations, but also as a foil to the pressures and man-made complexities of industrialization and city life. Such protected areas are not for intense recreational development, but they are landscapes to be taken on the terms of nature.

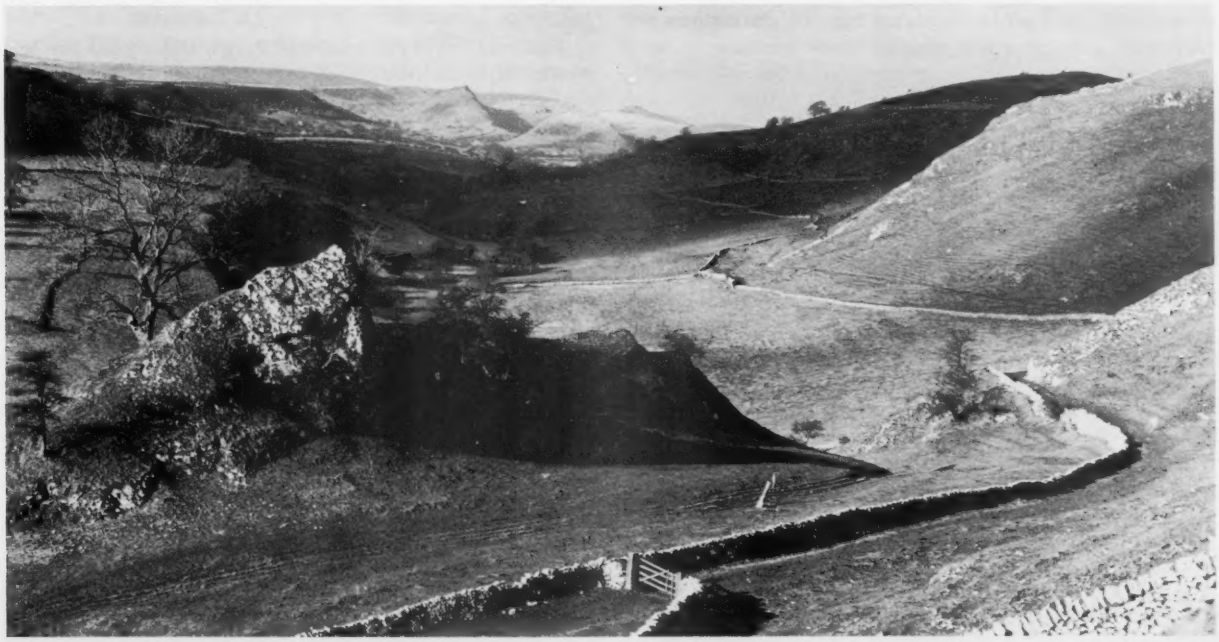
If one dares to mention English (or Welsh) National Parks at international conferences very soon someone will say "You do not have National Parks". So, for a moment, international reader, could you please forget those words. What this article proposes to describe is the equivalent of the German Naturpark, or the French Parc Naturel. Such an area is the Peak District, an example of a Council of Europe Category "C" Protected Landscape. All praise to the Council of Europe for bridging the language barrier!

The Peak District is ringed by cities—it is as vulnerable as it is valuable—with 17 million people living within 80 kilometres of its boundaries. The gritstone area to the north has a wild character; though no land is higher than 650 metres above sea level, walking is a tough activity because of the boggy nature of the terrain, and the variability of the weather. In the south, on the other hand, the limestone scenery contains lush wooded dales; in all a splendid contrast to the surrounding cities.

Land in the Peak District is generally privately owned and farmed, though it is not farmed intensively. The land supports a limited number of sheep and cattle. The area is protected by planning control which is able to prevent large scale building. Access to "open country" can be provided by access agreements and potentially the form of land management can be controlled by management agreements. Beyond this the Park Authority can acquire land, work with highways authorities to deter unnecessary automobile traffic, provide walking trails and information centers and take many other intiatives to secure the wise management of the area.

A completely new departure is the preparation of a Structure Plan for the Peak District. Throughout Britain, the major local authorities (generally the counties) are each required to prepare

Upper Dove Valley, a typical part of the limestone area in the south and center of the Peak District National Park.



such a Structure Plan which sets out the policy that will be followed. The Structure Plan is not involved in detail matters, but it does set the guidelines for future work and is a basis for development control and initiatives by public authorities following the approval of the Secretary of State for the Environment, a Minister of central government. The Peak and Lake Districts are the only National Parks authorized to prepare their own plans, so the Peak District is breaking new ground with its Structure Plan which has just been published for submission to central government. Six public meetings were earlier arranged, four special meetings with other authorities have been held, and the Board's staff has been on tour to twenty-three villages throughout the area to discuss the matter with local people.

For the Peak District, the Structure Plan introduces a zoning system. Under this system the greatest protection will go to nature reserves, some of national importance already being managed by the Nature Conservancy Council. One of special significance is Lathkill Dale National Nature Reserve which is leased to the Conservancy by the Peak Board. Many other areas have been already defined as "Sites of Special Scientific Interest" and although the controls available are often limited, in this case the Peak Board proposes to do all it can to protect these areas.

A completely new proposal in the Structure Plan is the designation of some very extensive areas (generally the gritstone moorland and the limestone dales) as "natural zones". In these areas man's influence is rarely obvious but nature's is, by contrast, strong. Though there is some grazing, and burning and draining for moorland management, vegetation is invariably self-sown. Here are qualities of remoteness, tranquility and beauty. The policy therefore is to confine recreation to the kinds which appreciate these qualities, particularly walking. Here change will be opposed and conservation management policies will be developed with various interests in the land. Control policies will be used to the full and only in exceptional circumstances will planning permission be granted for any change.

The remaining area is termed the "rural zone." Here farming and forestry will remain the main land uses, respecting and maintaining the character of the area. New farm buildings should be of approved design (though, it must be admitted, controls on smaller farm buildings are limited) and recreation will be controlled to minimize visual impact. Whilst the provision of short-term accommodation on farms may be encouraged, further permanent caravan (camping vehicle) sites will not normally be permitted. The Peak Board will endeavour to ensure housing relates to local need, second houses and commuter dwellings being discouraged. New housing will be restricted to the main villages.

Kinder Scout, an area of millstone grit typical of the northern part of the park.

A park staff member discusses the Structure Plan with a member of the public at a "Planning Surgery."

A special problem is employment. Long before the Peak District was designated as a protected landscape, quarrying had been an important source of local employment. Now the increasing scale of quarrying is causing the Peak Board concern. Ironically, as pressure comes to extend quarrying, with the advent of mechanization the amount of employment is less; the long term benefits are in any case likely to be few if resources are exhausted. The Structure Plan therefore proposes a much more restrictive policy than in the past and it suggests that small light industries in the villages of the Peak District may be preferable for they make far less impact on the landscape and create greater diversity of employment. In the remote areas, such employment is of special importance to help retain population.

There are other problems too. A new major road has been pressed for by the roads lobby to pass through the Peak District from Sheffield to Manchester. The Structure Plan proposes that long distance traffic should go around the Park, not through it, and such a policy has the support of public opinion. In a Peak District survey, nine people out of ten were concerned about such traffic.

The job of conservation, including understanding and appreciation of what is implied by that term, is of increasing importance to the Peak District. But this landscape is also part of a European Heritage recognized for the past ten years by a Council of Europe Diploma. Maintaining standards is essential and it is the author's personal hope that both IUCN and the Council of Europe will develop these in greater detail in years ahead in the same way that international bodies have set standards for areas nearer to a wilderness in concept. The Structure Plan technique is a unique one for a Category "C" landscape, yet one wonders whether other countries are developing similar methods? If so the author would be interested to hear about them.

Theo. S. Burrell is the Peak District National Park Officer, Aldern House, Baslow Road, Bakewell, Derbyshire, DE4, 1AE, England. *(The Structure Plan for the Peak District is obtainable from the Peak Park Joint Planning Board at the above address, price £2.12 including postage. Ed.)*

Yves Renard

Interpretation in the Nature Park of Guadeloupe

AN INTRODUCTION by Gerard Werter, President, Association des Amis du Parc Naturel de Guadeloupe.

Already in existence as a result of determined local initiative, the Parc Naturel de Guadeloupe in the French West Indies will soon achieve the status of National Park in accordance with French regulations.

Guadeloupe's Nature Park is primarily a rainforest, uniform when seen from a distance but ever changing in appearance according to the time of day, lay of the land, and altitude. Many tropical plant species intermingle here: great trees form an almost uniform canopy 40 m high, sheltering spectacular plants, lianas and epiphytes, tree-like ferns, and palm trees. The fauna is relatively poor, however, despite the occurance of the native raccoon, (Procyon minor), *an agouti,* (Dasyprocta noblei), *and birds, some of which are native species, such as the Guadeloupe woodpecker* (Melanerpes lherminieri) *among others.*

The Park is alive with water, with its waterfalls, the most spectacular of which are the three falls of the Carbet River (115, 110 and 20 m), each more enchanting than the other. There are, as well, less accessible cascades, and ponds that mirror the changeable weather in their still waters.

Another great attraction of the Park is its varigated mountainous landscape with its distinctive altitudinal vegetation, dominated by the volcano, La Soufrière (1467 m). Dormant since the 1956 eruption, La Soufrière's volcanic and seismic activity began again in July 1975, cumulating one year later in a considerable eruption at the summit, which opened new fissures, spewed lava and volcanic ash, and caused numerous mud flows.

The Nature Park also consists of certain low areas, with a climate that is sometimes very dry, where the vegetation is widely varied and includes several coastal types (mangrove, sea-cliff plant communities, etc.), that may be associated with marine life; along parts of the coast this is very rich, particularly in the wide bay known as "Grand Cul-de-Sac Marin."

The Nature Park also includes archeological and historical sites, testimonies of a past, and a living heritage which must never be forgotten. Whether we think of native fishing techniques or landscapes typical of the Guadeloupe Archipelago, these are magnificent works of both man and nature.

The Parc Naturel de Guadeloupe preserves and interprets this heritage.

Although we recognize that parks perform an essential educational function, the methods employed to give the public an idea of the environmental wealth being protected very often differ, and distinctions are generally made between facilities for recreational and educational purposes. This distinction reveals moreover the choice of management objectives for some national parks. In some of these, large sections are often devoted to uses which might best take place outside the park area.

In order to avoid excessive development within the Nature Park of Guadeloupe, and in keeping with the Park's overall objective and purposes, we have attempted to link closely the development of interpretive and visitor facilities (trails, picnic areas).

For example, picnic sites would not be justified in the Park if they were to function merely as roadside rest areas or to serve the people who invade the beaches on Sundays. Rather, they should be designed and managd to function as an element in the interpretation of the Park's environment, a place where the public's first contact with nature occurs, a place to stimulate curiosity and inspire people to see more.

Information exhibits

Although the organization of nature walks and interpretative discussions have not been neglected, local conditions led us to favor the creation of permanent centers where the main themes of the Park are presented in various ways. Our program includes establishment of six exhibits centered on the following themes: the forest, volcanism, marine life, archeology, woodcraft, and traditional coffee-growing techniques.

To date, two of these centers have been opened to the public:

- First is the *Carved Rocks Archeological Park,* surrounding the stone carvings believed to have been made by Arawak Indians (3rd-8th century A.D.). Here with the help of a small exhibit, a marked trail and a leaflet obtained at the entrance, the visitor can develop a full appreciation of the site that is interesting not only because of its pre-Columbian remnants but also because of its vegetation, topography, and scenery.
- Second is the *Forest Center.* This is described in detail later in this article.

Four other park centers are being built. They are:

The *Volcano Center,* to be placed at the foot of the active volcano, La Soufrière. It will house an exhibit on volcanology in general, but with specific reference to Guadeloupe. This exhibit, which has been planned for many years, is now more timely than ever due to the recent volcanic activity and public curiosity about this spectacular phenomenon.

The *Marine Center* will present information on the Park's marine environment: a series of small exhibits will include educational posters, aquariums and dioramas. A trail will direct visitors

to a nearby reef where they will be encouraged to discover, as skin divers, its underwater beauty.

The *Coffee Center* will house an exhibit dealing with the history of coffee, of life on a coffee plantation, as well as coffee-growing and processing methods. Posters, displays, and audio-visual presentations will be used.

The *Woodcraft Center* is a larger project based on a cooperative of craftsmen, (from lumberman to cabinet-maker), which will house a workshop, a boutique, and an exhibit center. Here all the traditional woodcraft techniques will be shown with the help of posters, audio-visual material, displays and furniture arrangements.

The forest center

This exhibit clearly illustrates the general principles which have guided us. Our purpose has been to make known this natural resource by encouraging active visitor participation to the fullest, knowing that visitors often must be "attracted", and that their backgrounds and interests vary. The tourist from abroad will obviously look at this area with a different perspective and motivation than a student from a nearby village.

This exhibit, as conceived, has three main elements:

1) *The Nature Center* is situated at the edge of the road and functions as the visitor reception center. Posters illustrate the various types of vegetation found in Guadeloupe, and the ecological factors that determine its distribution (rainfall, topography, soil, etc.). Also defined are the stages of forest clearing and the past and present causes of the retreat of the forest.

The forest environment that the park visitor is preparing to see is therefor placed in its proper regional context, and explained in terms that the visitor understands without detailed information about the tropical rainforest *per se*.

2) At this Center the visitor also obtains leaflets to serve as

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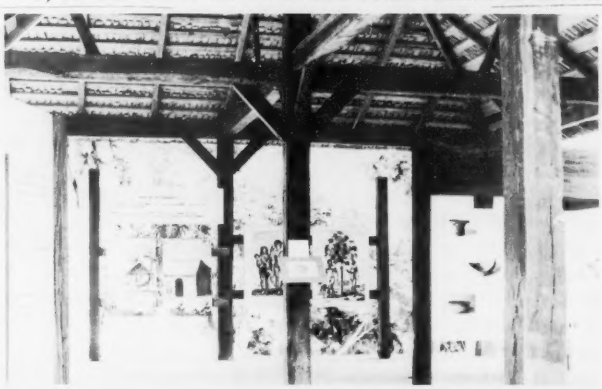

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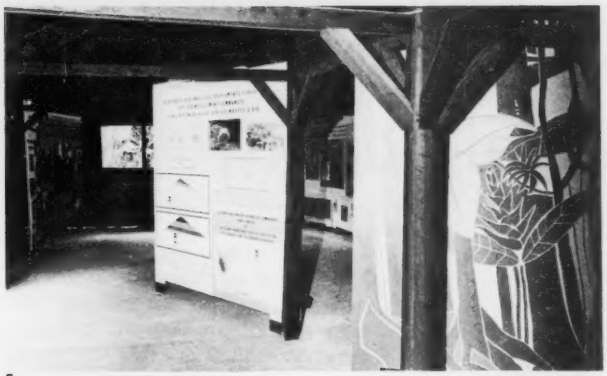
1. One of the large park entrance signs marking the entrance to the heart of the Park.

2. The rainforest of Guadeloupe is particularly rich in interesting plant species. Its insular condition makes it a unique exponent of a closed and complex ecosystem.

3. At the Carved Rocks Archeological Park, the visitor is welcomed by a small exhibit on Antillian archeology. Then he may take a trail on which, with the help of a leaflet obtained at the entrance, he can discover not only the petroglyphs of the Arawak period (3rd and 8th century A.D.), but also certain special plants known to the natives, and their uses.

4. Near the Nature Center an outdoor display describes the five great natural regions of Guadeloupe by means of maps and detailed legends.



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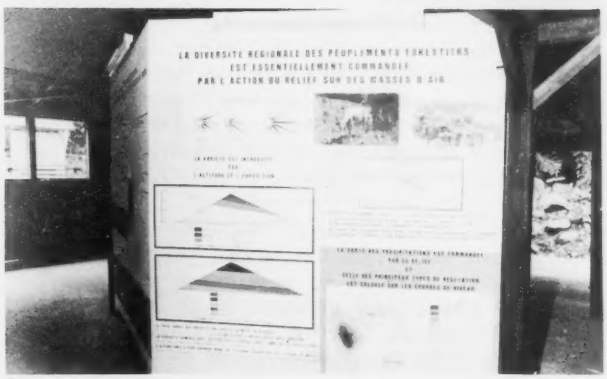
LA DIVERSITE REGIONALE DES PEUPLEMENTS FORESTIERS
EST ESSENTIELLEMENT COMMANDEE
PAR L'ACTION DU RELIEF SUR DES MASSES D'AIR

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guides on the trails he will take. There are three trails, of varying length, to satisfy all tastes.

Along these trails, small wooden markers carry numbers referring back to the leaflet. We believe texts should evoke wonder in the visitor rather than simply providing a description of surrounding nature. For example, marker 4 on trail 3 reads:

In times of heavy rains, this enormous sponge is engorged with water which it progressively releases during less humid periods: it also functions as a filter by retaining the nutritional elements found in suspension in the runoff waters.

If you follow this trail carefully, as marked, you will leave intact for other visitors what nature has at one time or another patiently created.

This complex root formation at your feet is a minature model of the tropical rainforest ground surface.

3) These three trails lead to forest shelters, three small buildings constructed in the heart of the forest, where are presented:

a. An audio-visual show, essentially composed of photographs taken on the trails which answer in some measure the questions the visitor may have asked himself as he walked along the trail. It illustrates the importance of tropical rainforests and plant communities in the evolution of the world's vegetation regions as well as their present distribution, and concludes with the Guadeloupe rainforest, its extent and its flora.

b. An exhibit on the structure and biology of trees—a less interesting subject, perhaps, for the public at large—which appropriately has been introduced by the preceding exhibits.

c. An exhibit on the ecology of the tropical rainforest of Guadeloupe, its fauna, its conservation, its uses (recreation, timber harvest, etc.).

The main advantage of such an interpretative approach is that it offers the visitor ample opportunity for active participation. Great emphasis is placed on personal discovery. The visitor is virtually compelled to leave his car and the parking lot in order to penetrate the forest's interior. His interest and motivation are then quickened.

Among the problems posed by such an approach is the difficult choice that must be made on the level of presentation. There is a constant risk of swinging away from the planned optimum approach toward a presentation that is either too superficial and teaches the visitor nothing, or toward an exaggerated didactic tone which discourages and disappoints him. We must constantly be watchful to maintain the best approach in order to make our park an attractive, understandable "field laboratory" for any public rather than a playground on the one hand, or a replica of schools and universities on the other.

5. and 6. Interior views of the Nature Center showing displays explaining the predominant ecological factors in the area. The use of adhesive letters of various sizes permits the presentation of a great amount of information on a given subject; the casual visitor may limit himself to the title block and diagrams, while the more interested visitor may study all the data. Diagrams rich in color permit rapid visualization of essential facts.

7. Small markers placed along the trails are made of wood posts capped with green and white plastic plaques.

8. Point of departure of two shorter trails the visitor may choose.

9. The Audio-visual center, situated in the heart of the forest, is built in the traditional architectural style of the country.

Yves Renard is in charge of educational and cultural affairs for the Parc Naturel de Guadeloupe, Jardin Botanique, 97109 Basse-Terre, Guadeloupe, FWI.

Andy Leon Harney

Seattle's Gas Works Park, an Unusual Adaptive Use

Historic preservationists have enthusiastically accepted a movement, called "adaptive use," to convert outmoded industrial buildings for uses having relevance today without sacrificing their architectural integrity. The movement has taken hold and diverse structures—from old silk factories to railroad stations to breweries—have been converted to serve other needs.

Large structures are often used for community centers, special auditoriums, schools and other public uses. The desire to retain the charm of older buildings, coupled with the interesting architectural solutions for the adaptive uses, has captured the imaginations of millions of Americans.

Often, however, conversion of a structure has involved more cost than building anew, and plans had to be abandoned and the building demolished. But recently it has made economic sense to retain structures rather than tear them down and put up something new. Thus the enthusiasm for adaptive use has reached new heights.

The Gas Works Park described in these pages is perhaps one of the most unusual adaptive uses of an industrial site because the structures have been retained as much for their sculptural qualities against the skyline as for their functional uses. It is an example of an imaginative and sensible money-saving idea which allows the people of Seattle, Washington, to enjoy an open area that is much more than a vacant space with some grass and a few picnic tables.

A gas refinery is a most unlikely location for a public park, yet Seattle's Gas Works Park is just that—a refinery adapted to a contemporary need.

The idea grew out of both vision and necessity, according to the city's Department of Parks and Recreation. It took imagination to know what to do with a site that included 1,071 miles of gas mains and soil that had been saturated with oil. Constructed in 1906, the refinery was built to distill illuminating gas, oil, tar and other products, initially from coal and later from crude oil. Despite the investment in machinery and structures, the plant went from a peak of production in 1954 (when it produced 30 million cubic feet of gas a day) to abandonment in 1956 with the advent of natural gas.

Thus, from 1956 to 1969, the structures on this point of land jutting out into Lake Union, with an extraordinary view of the city of Seattle, were left to rust. City officials with vision saw the potential for this land to be converted to park use. The unacceptably high expense of tearing down all the towers, combined with the enthusiasm of landscape architect Richard Haag, brought about the transformation of the property into a stunning adaptive use of a site which is accessible by both land and water.

The first concrete plans began in 1969. The park had sculptural appeal, historical appeal and an ideal location.

Under the original agreement, the local gas company was to transfer the land to the city free of any structures. Architect Haag convinced city officials that there was a better solution that would make a more effective park and cost everyone a lot less money.

"It seemed to me to be a tragic loss to tear down all those structures and end up with a vacant lot," said Haag. After much arguing back and forth, Haag's vision prevailed.

"We treated it like a sculpture," said Haag. "We tore down only

Seattle's Gas Works Park.
Photo: Dennis Wilson

the structures that were so badly deteriorated that they were unsafe, and then we waited and looked at it awhile before we cleared away some of the machinery and cylinders."

The soil was badly permeated with oil. The worst soil was bulldozed into a heap and covered with better soil. The rest of the land was deep tilled and fertilized with sewage sludge.

The existing structures were converted whenever possible. There was one large building called the exhaustor building, made of wood and covered with metal. The fumes and soot from the towers had badly damaged the metal sheathing, but the wood structures underneath were in excellent condition.

"The soot, combined with the rain and moisture, created sulphuric acid, which, in fact," says Haag, "preserved the wood."

One of the structures now serves as a play barn. The 20,000 square-foot building is filled with much of the machinery that originally stood on the site. The piping has been "pruned" so that dangerous parts have been removed and it has been painted bright colors, making it an attractive play area for children. A similar outdoor play area in a sand pit will be constructed with parts of tubing found at the site.

Another covered building has been converted into a large picnic shelter. The shelter has portable charcoal grills, fireplaces, and sinks. Electricity outlets are available. Large groups can reserve the structure and hold their events whether it rains or not.

The "viewing mound," made from soil that had been permeated with oil, was covered with grass, and is slated to have a man-sized sun dial in a crater at the top. The visitor will become the style or gnomon for the sundial.

Several towers are about to be converted for visitor uses:

- a camera obscura—a tower will be made into a giant walk-in dark chamber.
- a solarium for small children will be made from a smaller cylinder.
- a mini-interpretive museum for small children will be fashioned from a small cylinder. Two Seattle women are in the process of writing a book about the Gas Works and the museum will reflect the text.

A dock is projected for the future for use by water taxis and pleasure boaters and the area promises to continue to be one of Seattle's most interesting public spaces.

The city of Seattle has demonstrated how an eyesore can be converted into a people's park, unique in its conception, original in its execution. It is one of the most innovative adaptive uses of a site in the field of park and recreation.

Andy Leon Harney prepared this article while she served as Consulting Editor of Trends Magazine, *a publication of the National Recreation and Park Association, 1601 N. Kent Street, Arlington, Va., 22209/USA. This article was adapted from* Trends, *January, February, March 1977 issue.*

W.A. Wilkinson

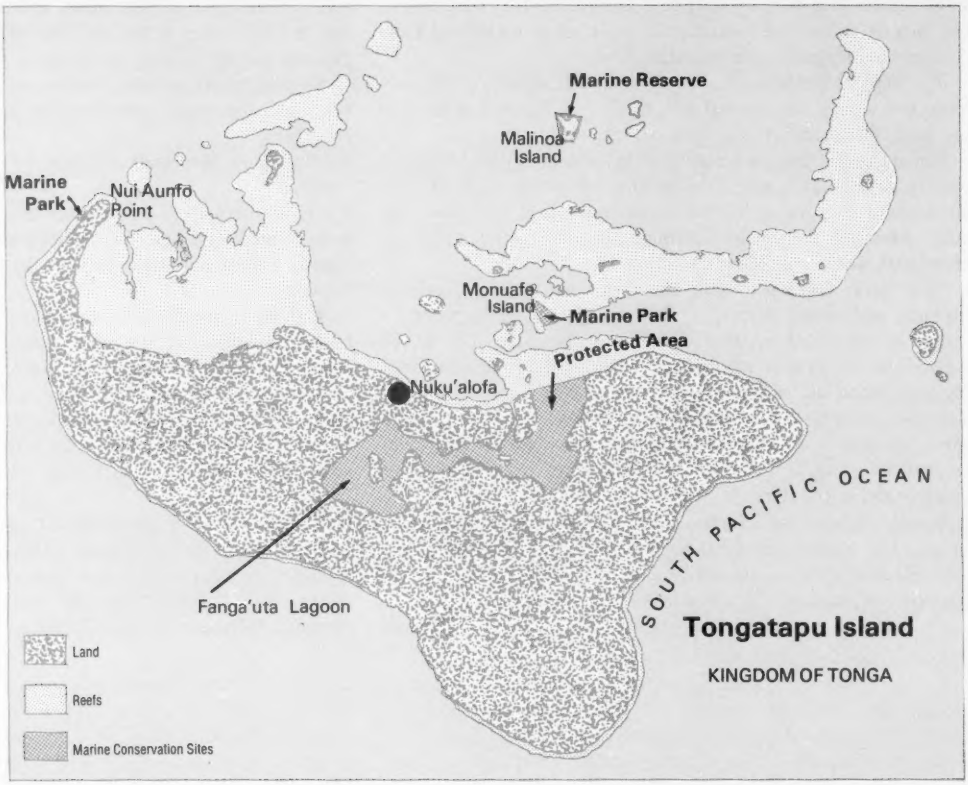
Marine Conservation in Tonga

Fostering the concept of Marine Conservation in a subsistence society is not an easy task. South Pacific Islanders have traditionally believed that the reefs and lagoons always would continue to provide their annual bounty. Although this assumption has served islanders well for centuries, unfortunately the modern need to support increasing populations, coupled with changed fishing methods, has placed excessive pressures on these resources. In some areas destruction of reef habitats and over-exploitation of fish stocks has resulted. In recent years, the Kingdom of Tonga has had the foresight to see the dangers, and has taken remedial steps in time.

Perhaps the most significant of the Kingdom's efforts has been the establishment of a large marine reserve in the lagoon called Fanga'uta, situated in the centre of the main island of Tongatapu, as a fully protected area. This lagoon, an inland water area of some 7,000 acres (2830 ha.), is very shallow with deeper channels running through it from seaward. Actually an estuarine area, the lagoon serves as a vital nursery ground for many reef and other food fishes which are the main-stay of the local subsistence fishery.

The Lagoon also supports juvenile populations of grey mullet *(Mugil cephalus)* and several species of penaed prawns, the most important commercially being *Penaeus semisulcatus* (De-haan) and *Metapenaeus ensis* (De-haan). However, within the lagoon there is no commercial exploitation of these prawns, as bottom trawling has been found to be unselective and destructive, killing large quantities of juvenile food fishes, mainly in the snapper family. (*Lethrinus* and *Lutjanus* sp.) The lagoon area is also an important breeding and nursery ground for these species. Actually, all commercial fishing in this area has been stopped, and effective legislation has now been promulgated giving legal powers to the Government's Fisheries Division to control the methods of fishing in this area; to protect the mangrove periphery; to ensure maintenance of habitats for valuable food fishes; to ensure control of the influx of noxious effluents harmful to fish stocks; and to control human developments along the lagoon periphery which might affect the ecosystem. The legislation has now been in effect for over 18 months and already local fishermen appear to have fully accepted the situation. Conditions in the lagoon have improved; for example there has been a marked improvement in the beds of the mussel *Modiolus agripeta* which has, in recent years, been over-exploited to near extermination of the population. Other species of shellfish, such as the clam *Codakia* sp., are also important features of the lagoon. Three species of the edible alga *Caulerpa* are also found in the lagoon, principally in very shallow areas. These have been used extensively by the local Tongans, and are a rich nutrient additive to their traditionally high carbohydrate diet of root crops. This resource has also suffered from excessive harvesting in the past.

The establishment of the Fanga'uta protected area is quite a



significant accomplishment in the Tonga region, and already benefits to the ecosystem are noticeable. This will make the task of establishing similar protected areas elsewhere in the Kingdom an easier one. Legislation to establish Marine National Parks and Reserves in Tonga is already in existence, and several well-defined areas have already been set aside for this purpose. One such area includes recreational beaches, on the mainland of Tongatapu, which are favored areas for visiting tourists. The visitors will not be precluded from these areas but they will be required to observe basic rules of conservation. For example, shells and live corals will be protected and tourists are encouraged to observe the exotic reef fishes and coral formations in their natural habitats. Parks such as these should be an attraction to tourists, a fact which has been proven elsewhere in the world.

Two outlying islands also have been declared as Marine Reserves. The island of Malinoa, approximately nine miles north of Nuku'alofa, has historical as well as natural interest. There, in earlier times, would-be assassins of the then Prime Minister Rev. Shirley Baker were summarily shot beside their own graves. The graves are clearly marked and well tended to this day—perhaps an indication of some sympathy for the deceased. Nearer the capitol of Nuku'alofa the typical atoll called Monuafe has also been declared a Reserve. This is considered one of the best shelling atolls with a fringing reef of Stag's head coral. (*Acropora* sp.) This area has suffered recently from a local method of fishing—called "Tu'afeo" in Tongan—which is particularly destructive to habitat and fauna. The method is simplicity itself: a large coral head is encircled by a small mesh net, and then the coral head is systematically broken up and the small escaping reef fishes captured in the encircling net. All fish—unfortunately mostly very small specimens—are taken in this way, and the habitat itself is irretrievably destroyed. Creation of Marine Parks can effectively control this destructive method of fishing, which has devastating effects on the long-term productivity of the reef.

In Tonga, we are pleased to note that the South Pacific Commission has recently appointed an Environmental Officer to its staff. He will be involved in the coordination of conservation efforts throughout the region, as well as advising on environmental policies, both terrestrial and marine. Hopefully, educational systems in the region will play their part in ensuring that environmental studies—even in the simplest terms—are included in the curriculums of both primary and secondary schools. Only by inculcating essential environmental concepts in the young people of the islands will we ensure the future preservation and wise use of island marine ecosystems, which is so essential for future food requirements, as well as the attractiveness of the islands to visitors. Though much remains to be done, the Kingdom of Tonga has made an encouraging beginning. We hope other Pacific Island areas will follow.

W.A. Wilkinson is Fisheries Officer, Department of Agriculture, P.O. Box 14, Nuku'alofa, Kingdom of Tonga.

PARK VIEWPOINTS

Islands in Space and Time

I regard the park idea as one of the great inventions of the 20th century. It started certainly in the end of the 19th century, but it was polished, honed and perfected, and it is still evolving as one of the great ideas of our century.

The idea that we as a generation hold landscapes and animals in trust for our descendants is a very important one. A great many nations, large and small, have their national parks.

Nonetheless, we've got to be continuously careful that we don't subvert the park ideals by linking them too essentially with the commercial attributes that to a very large extent motivate much of what our society does.

Let me quote from the Parks Canada policy statement, "The basic purpose of the National Park System is to preserve for all time areas which contain significant, geographical, geological, biological or historic features."

I'll follow that with another quotation, "Our most fundamental obligation is to preserve from impairment all significant objects and features of nature in the parks." Let's not forget that.

Another quote, "It is part of our National Park purpose to maintain the quality and beauty of wildlife", and beauty there is not meant only in the visual sense. It is meant in the same sense that a mathematician uses it to describe a terse, elegant solution to a mathematical problem.

However, none of this has ever been conceived as locking parks up. Let me quote Aldo Leopold, "This vision involves no deep-freeze areas from which man is excluded entirely. It is not land and life in a museum cabinet. It is, rather, an asset to be enjoyed by many forms of use that leave no legacy of alteration."

One of the well-known American contributors to the wilderness concept, S.H. Spurr, says "Each of us wants the knowledge that whether we use it or not, whether we visit it or not, there exists, available to us, a refuge from the sights and sounds and smells of man." But Spurr was a realist also and he accepted that there were no landscapes which haven't in some way been altered by the presence of man, be it only from atomic fallout.

Forty years ago, park management appeared uncomplicated. Protect from fire, chase out the poacher, build what roads, trails and other facilities you could afford. Wildlife management was not yet invented. The warden was the final arbiter. Nobody had ever heard of an Environment Impact Assessment.

But that's a day gone by. The challenges of today are quite different; but they are no less real.

The challenge today is the wilderness type park as it offers to nature-oriented people opportunities that rekindle the joy of achievement, where man is interacting with primitive challenges. It may be a species to be photographed, a fear to be surmounted. It might be a route to be run, a peak achieved, a physical contact with danger to be survived. All these are very important. They are high points in the lives of people which are otherwise sometimes humdrum.

Every life is better for its peaks; they make the depressions more tolerable. And to many people the great National Parks particularly of the American west and the north are the places where these experiences are available to them. Let's keep it that way.

I want to turn next to parks as refuges. Parks are more and more becoming islands surrounded by a sea of man-altered landscape. One of the major roles of National Parks around the world is to maintain the rich diversity with which this world is endowed.

Our goal as conservationists is not to stop the world at a point in time, but to play along with evolution so that the rate of species loss doesn't get too far out of step with the potential for species gain. In many parts of the world we are approaching a state where many species survive largely in the insular refuges provided by parks and reserves.

One of the interesting things about "island" systems is that they lose their fauna, steadily at a predictable rate. The rate of species loss depends upon the area of the "island." The larger enclaves lose them more slowly but they all lose them. There are lessons in this for all who support the National Park idea.

The first conclusion we must accept is that the larger and more diversified the area within a park, the more likely it is to keep its ecosystem of plants and animals intact.

The second thing that we learn is that those responsible for the management of a park cannot close their eyes at the boundary lines. You must be aware of what is going on in the area around you, because, like it or not, it is influencing the area for which you have responsibility. Certain species are much more extinction-prone than others. Among these are the large carnivores, with their requirement for extensive home ranges, consequent low density and low reproductive rate.

There are a number of species in the North American west and north that are living very close to the edge of survival. Mountain goats and the arctic and mountain caribou are among these. In each species the population balance is very easily altered, sending the animals into crash declines that may lead to local extinction. When a species is widely distributed, the area of loss will, in time, be recolonized, but isolated populations may be gone forever.

The special cases of extinction-prone species are the grizzly bear, timber wolf, cougar and wolverine on the Canadian scene. These are the species most threatened.

My topic so far has been "Islands in Space." I'd like now to discuss "Islands in Time," because this is really what our historic parks are. You can recreate the physical situation, you can reconstruct the buildings and find the plows. But I'm a biologist.

What have you done to recreate the biological situation? Are the plants that you plant the ones that the old Cornishmen brought from southern England? They could be!

What animals did they have? Their cows and goats and sheep were not the types we are used to today. It would be fascinating to determine what plants and animals the first Europeans on this continent brought with them and to find them or recreate them through special breeding programs. Few visitors ever think of man as an evolutionary force and find it fascinating to realize how much we have altered both plants and animals to better serve our purposes. It's an interesting challenge.

The National Parks, the great natural parks, have a tremendous history which is still to be explored. I know very many people share the excitement that comes from following the routes of those who first penetrated the remote parts of Canada. I found it fascinating to climb the slopes of Mount Southesk and sit there with a copy of the Earl of Southesk's journal written a century earlier, when he rode from Winnipeg on a wild bighorn sheep hunt. He entered through the pass I entered, he climbed the slope I climbed, he sat where I had been sitting, he counted the sheep and described their horn form. The total scene he described lay before me. You simply couldn't have told the difference in a century.

I'd like to turn next to the question of disturbance because it again is another impact of people on parks.

We are finding more and more how important disturbance is. Northern species, particularly in the winter time, are frequently living with very delicately balanced energy reserves.

One snowmobile party attempting to get close enough to a group of bighorn or a herd of deer or elk to get photographs is sometimes sufficient to ensure that those animals don't live. That is one effect of disturbance.

Then there is wilderness wildlife. What is it about wilderness conditions that is essential to some of these species? We simply don't know. We speak glibly about wilderness wildlife and affirm that it must have wilderness to be there.

But we don't know what we mean when we say it. We should be finding out. With increasing pressure for wilderness use we must know what the impact of people doing various things, in various places, at various times, has upon the creatures which we hold in trust.

The grizzly bear is a problem animal. In a very real sense it is a symbol of wilderness. It is at the pinnacle of the food pyramid in its ecosystem, recognizing no important enemies but man. When the fear relationship with man goes as a result of increasing positive contact, the bear frequently recognizes man as a creature to be displaced (as it would another bear), or as a source of food. It becomes a hazard to human safety.

We must learn more about the behaviour and sensory physiology of bears and the nature of the stimulus to attack. I am confident that given sufficient information and the application of ingenuity we can learn how to turn off attacks and how to manipulate the relationship between man and bear so that both can continue to use the quiet places of our wilderness parks.

Here are my views as to the goals of the National Parks of Canada in terms of the last quarter of the 20th century.

1. To maintain for all time intact ecosystems as important resources wherein we can develop our understanding of the functioning of living systems, plants, animals and man jointly using natural landscapes.
2. To maintain the genetic diversity we inherited in our land by preserving intact examples of the rich variety of living forms in the full diversity of Canadian natural landcapes.
3. To foster man's reverential awe for the beauty and greatness of a "creation" larger and more intricate than himself.
4. To provide novel natural obstacles, the mastery of which rekindles the joys of attainment.
5. To provide an antidote for the crowding that shuts each of us ever more within ourselves.
6. To make available the aesthetic and inspirational values of wildlife and wild landscapes to people of differing physical and intellectual competence—keeping in mind that true appreciation comes only with understanding.
7. To vitalize facets of our history so that those present will understand something of the lives and challenges of those we follow, the routes we have travelled, our gains and losses along the way and some of the consequences of our passing.

To do this would be no small achievement.

Dr. Ian McTaggart Cowan is Professor of Zoology at the University of British Columbia. These remarks, reprinted from "Conservation Canada", *Spring 1977, were based on an address to a national conference of Parks Canada Superintendents.*

Jasper National Park, Alberta, Canada. Photo: Ted Grant

PARK PRACTICE

Getting The Most From Your Slide Presentation

The following suggestions are written with the park employee in mind, but they apply equally well to anyone who takes color transparencies and shows them to others, along with an accompanying commentary (Fig. 1).

Slide presentations are a combination of the ancient and the modern in communications. When we look back into our past as far as our imagination will let us, we see people around the campfire telling each other about where they've been and what they've seen and how tall the grass grows beyond the mountains. We're still doing much the same thing only now we have proof of what we say, in our color slides.

This enrichment of our powers of description ought not to impoverish the spoken word. Make your words as colorful as your pictures—and as clear. To make them colorful use exciting, image-producing words. A speaker can say "Here's a beautiful sunset on St. Mary's Lake" or the speaker can say "St. Mary's Lake was touched with glory that evening." Employ unusual verbs, similies, and metaphors to stimulate imagination—"a goldfinch sowing the wind with thistle seeds," "a fawn trying out tight new hooves"—images such as these should help to keep your audience not only awake but keenly interested. Remember—slides are beautiful, but dumb. You must be their voice and must interpret their significance to the audience.

Figure 1. An automated program using color slides. This machine is equipped with a sound track, and is activated by the visitor. (Photo: Grant W. Sharpe.)

Slide Care

Make sure your slides *are* beautiful and that they clearly illustrate the points you wish to make. As soon as your box of newly developed slides arrives, it should be examined. using either a hand viewer or projector. Slides that are poorly composed, over- or underexposed, blemished with streaks or spots, or in any way substandard should be discarded. Vertically oriented slides should not be used. They cannot be properly accommodated on a screen shaped for horizontal pictures, nor are they acceptable for TV, which also has a horizontal format. They may be used in publications, however.

The slides are returned to you in a cardboard or plastic mount. It is not always possible to find the time to bind the slides right away, but you should always label them immediately. Eventually the cardboard mount will be discarded, so use it to jot down the essential data—date, location, subject, and photographer's name. You should have recorded these data in your photographic notebook at the time the picture was taken, of course, but now is the time to transfer the data, as you may not be the one who eventually puts the slide in a permanent mount.

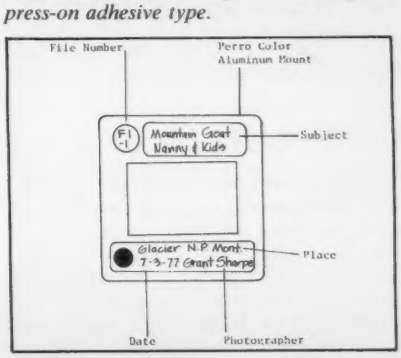
Mounting the Slide. Slides that are to be used frequently should be bound in glass in order to protect them. Also, bound slides will not pop out of focus in the projector and are easy to keep clean. There are many ways of mounting slides in glass, each marketed by a different company, and each having some advantage or disadvantage.

Figure 2. A student in Outdoor Recreation at the University of Washington demonstrates slide binding technique. (Photo: Rick Ells.)

The Outdoor Recreation slide collection at the University of Washington is bound in a Swiss-made Perro Color aluminum mounts with anti-Newton-Ring glass. Chamois cloth is used to clean the glass, and a Static Master brush is recommended to remove lint from the slide (Fig. 2). A crimper is used to lock the edges of the aluminum mounts. Slides should not be bound during periods of high humidity as any moisture trapped between the glass and the color transparency will condense when heated in the projector and create moisture blemishes on the film. This precaution is advisable even when using the anti-Newton-Ring glass.

Labeling the Slide. After binding each

Figure 3. A suggested method of labeling slides. The blank labeling material is of the press-on adhesive type.



slide, make sure it is properly labeled. A complete label includes the subject (at top), the place, date, and the photographer (at bottom). Perhaps the name of a park or agency may be included at the bottom. If these are to go in a slide file collection, the file number should appear on the label. Slides labeled in this manner are easy to file, and if they are to be used in a publication, the photographer may be readily identified and credited for the art work. We suggest the format shown in the illustration (Fig. 3).

Storing the Slides. Now that the slide is mounted and labeled, what happens to it? A storage file is recommended if the slide is to be kept safe and easily retrieved. The type of storage depends largely on the available financial means. Numerous kinds of storage units are available. A popular method for modest collections is the use of plastic sheets, each holding 20 slides (Fig. 4). These sheets are stored in loose-leaf notebooks. For those who can afford them, elaborate filing cases are available, some accommodating over 6,700 slides in 52 steel frames (Fig. 5). Whatever method is chosen, the slide collection needs a suitable filing system, a means of not only locating the slides but of getting them back eventually to the proper place after use.

Figure 4. Plastic sheets each holding 20 slides provide relatively inexpensive storage and permit visual access to each slide. (Photo: Rick Ells.)

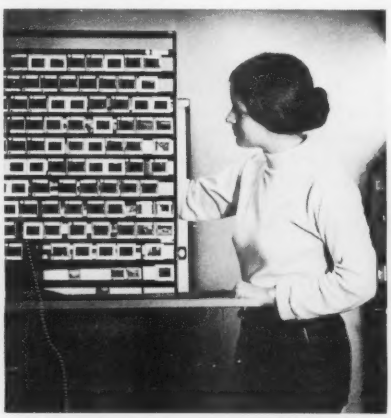


Figure 5. A large storage cabinet with a light panel for easy viewing of the slides. (Photo: John Spring.)

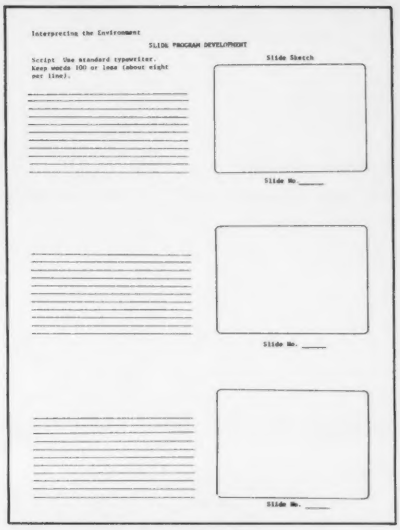


Figure 6. The use of Slide Program Development sheets will result in a more coherent and memorable presentation.

Figure 7. Title slides give direction and cohesiveness to an interpretive talk. (Photo: Grant W. Sharpe.)

Making up the talk

Although there are situations when a talk must be made up from slides on hand and a script written to fit the slides, ideally, slide presentations should be carefully programmed by writing a script first and then locating slides or taking new ones to fit the script.

One method of preparing a script is to use Slide Program Development Sheets. Note from the illustration (Fig. 6) that each sheet contains three sets of parallel guidelines. The message or script goes here. Type in your script. If you use a standard typewriter, each line will accept seven or eight words (taking about three seconds to read). The total message for each slide should be equivalent of one-half minute or less.

The right side of the sheet contains three blank areas for pencil sketches. These sketches convey what you wish to have the color slide illustrate. When the slide sequence calls for a dark-out or for a title slide, mark the sketch area to note this and proceed to the next frame.

Presenting the talk

Since their appearance in the 1940's, 35 mm color transparencies and projectors to show them have been developing in sophistication. As some early models still survive, any discussion of slide projectors must take this diversity of equipment into account.

Readying the Slides for the Projectionist. If you are not using automatic projection equipment, use a slide box. Handing the projectionist a stack of slides tightly wrapped in a rubber band is asking for trouble. As one takes off the band, the stack can easily "squirt." It takes time and concentration, as well as a rack or light table, to place them in order again. These are not available when a scheduled talk is about to begin.

Too many slide shows have slides appearing up-side-down, redundant shots, lint and fingerprints on slides, and worst of all, blank spaces that assault the eyeballs and destroy the speaker's rapport with the audience. Get a projectionist you can trust. Let this person know the success of the talk is partly dependent on him or her.

The Projection Equipment. When possible the projection equipment and screen should be set up before the scheduled time of the talk. This would include the placement of the first slide in the projector properly focused for instant projection. Lack of this fundamental preparation results in a distracting lull and is certainly not an auspicious beginning. Although a smooth beginning may not be noticed by the audience, a disorganized start is embarrassingly apparent.

Distractions While Giving the Talk. If your equipment requires hand feeding by a projectionist and you must signal the change, this can be distracting to the audience. Constant repetition of "next slide please" or "O.K." is bad enough, but even worse is clicking a clicker, tapping a foot, snapping fingers, or slapping the screen. Some speakers avoid all this by simply ceasing to talk until the projectionist gets the message. None of these methods is satisfactory.

Signaling. A pencil flashlight makes a good signaling device. Covered by a fingertip, it produces a red glow. This can be done so deftly that it is scarcely noticed by anyone—other than the alert projectionist.

A better system, and one you can make yourself, is a light that flashes at the projector location. The light should be faint and shielded, so only the projectionist sees it. This signal can be made with approximately 30 m of light cord wrapped on a movie reel, a light, and a pendulum switch. Newer models of projectors have a remote control which advances the slide, getting rid of all these problems along with the need for a projectionist.

A pointer flashlight, which makes a

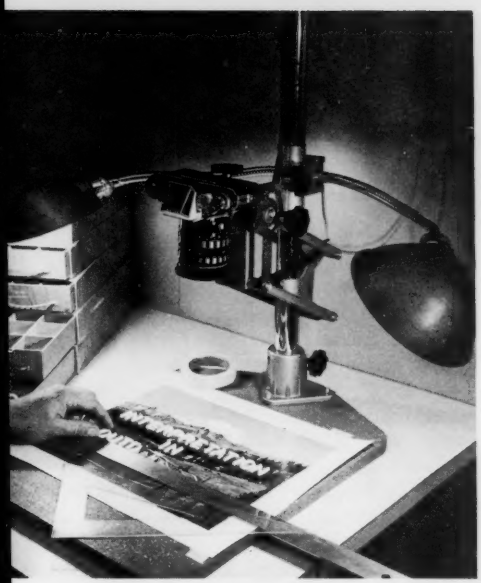
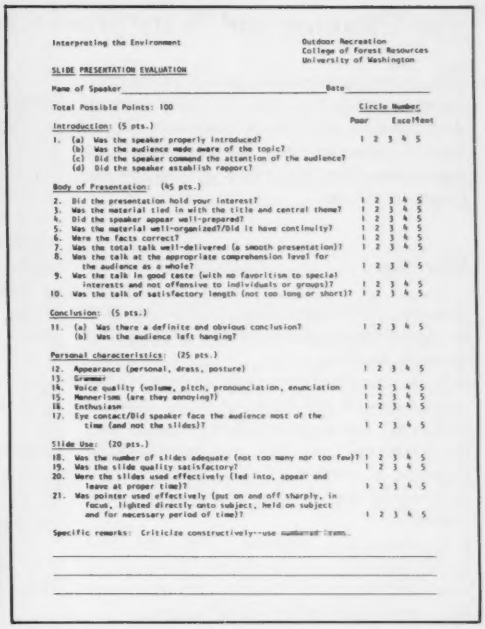


Figure 8. A simple method of making title slides. Small plastic letters are laid over a magazine or calendar picture and the picture (plus letters) is rephotographed, using a copy stand. (Photo: Grant W. Sharpe.)

Figure 9. A slide of a park sign, such as this one, may be used in a presentation to introduce the subject of visitor safety. (Photo: Gunnar Fagerlund.)

Figure 10. A sunset photo with letters superimposed makes an effective end to a slide presentation. (Photo: Grant W. Sharpe.)



Interpreting the Environment

Outdoor Recreation
College of Forest Resources
University of Washington

SLIDE PRESENTATION EVALUATION

Name of Speaker _____ Date _____

Total Possible Points: 100

	Circle Number: Poor → Excellent
Introduction: (5 pts.)	
1. (a) Was the speaker properly introduced?	1 2 3 4 5
(b) Was the audience made aware of the topic?	
(c) Did the speaker command the attention of the audience?	
(d) Did the speaker establish rapport?	
Body of Presentation: (45 pts.)	
2. Did the presentation hold your interest?	1 2 3 4 5
3. Was the material tied in with the title and central theme?	1 2 3 4 5
4. Did the speaker appear well-prepared?	1 2 3 4 5
5. Was the material well-organized? Did it have continuity?	1 2 3 4 5
6. Were the facts correct?	1 2 3 4 5
7. Was the total talk well-delivered (a smooth presentation)?	1 2 3 4 5
8. Was the talk at the appropriate comprehension level for the audience as a whole?	1 2 3 4 5
9. Was the talk in good taste (with no favoritism to special interests and not offensive to individuals or groups)?	1 2 3 4 5
10. Was the talk of satisfactory length (not too long or short)?	1 2 3 4 5
Conclusion: (5 pts.)	
11. (a) Was there a definite and obvious conclusion?	1 2 3 4 5
(b) Was the audience left hanging?	
Personal characteristics: (25 pts.)	
12. Appearance (personal, dress, posture)	1 2 3 4 5
13. Grammar	
14. Voice quality (volume, pitch, pronounciation, enunciation	1 2 3 4 5
15. Mannerisms (are they annoying?)	1 2 3 4 5
16. Enthusiasm	1 2 3 4 5
17. Eye contact/Did speaker face the audience most of the time (and not the slides)?	1 2 3 4 5
Slide Use: (20 pts.)	
18. Was the number of slides adequate (not too many nor too few)?	1 2 3 4 5
19. Was the slide quality satisfactory?	1 2 3 4 5
20. Were the slides used effectively (led into, appear and leave at proper time)?	1 2 3 4 5
21. Was pointer used effectively (put on and off sharply, in focus, lighted directly onto subject, held on subject and for necessary period of time)?	1 2 3 4 5

Specific remarks: Criticize constructively--use numbered items.

Figure 11. An example of an evaluation form. This could be modified to suit individual situations and sensibilities.

small light-spot on the screen, is a useful tool to indicate certain areas of your slide without your having to step in front of the picture. Be sure to turn it on only when it is directed at the screen and turn it off again before moving it—otherwise every eye in the room will follow it off the screen and across the wall. If you do not have such a flashlight, an old auto radio aerial makes a good pointer when mounted on a short piece of broom handle—and it telescopes when not in use.

Delivery. Your voice is a signaling device, too, and should be used with precision and forethought. Too many speakers, however sophisticated their equipment, are guilty of introducing each slide with "this slide shows . . .," "here you see . . .," or "this is a view of . . ." Occasional reference to a slide is unavoidable, but try to be inventive. Nothing is more effective than speaking of the scene as though you and the audience were standing in the middle of it. If you have a picture of a fawn lying on a carpet of leaves, you can say "If this fawn doesn't move, it will probably be safe, for it has no scent as yet and it is camouflaged by its colors." That sort of sentence is much better than "This slide shows a fawn. Notice how it blends into the leaves." Pretend you are actually there; don't emphasize the artificiality of the medium by referring to the fact that it is a slide, and not real life.

Don't wait for each new slide to appear before starting to talk about it. Anticipate the next slide with your commentary, then let it appear on the screen. A smooth flow of images and monologue will result.

Use of Title Slides. Title slides give direction to an interpretive talk (Fig. 7). Your audience may miss the title or certain aspects of your presentation, but title slides can make these clear and perhaps increase fact retention. Properly used, they give cohesiveness to the talk.

High quality title slides may be made in several ways. One is to photograph title letters placed over a solid color background. Another is to place the letters over an attractive color photograph, appropriate to the topic, and copy both the letters and color photograph (Fig. 8). Park signs also make excellent title slides (Fig. 9). Limit the words in a title slide to the least possible. Remember that while visitors are reading they may not be listening to what is being said. The title and the opening comments should flow into and reinforce one another.

Dark-out Slides. A brilliant flash of light appearing on the screen at the beginning or end of a talk is an unnecessary distraction and discomfort as well as the mark of an amateur. Pieces of cardboard cut to the size of 35-mm mounts effectively block the light of the projector bulb and enable you to begin and end your program smoothly. The use of these dark-out slides greatly increases the professionalism of your presentation.

Ending the Talk. It's a good idea to use a closing slide of some sort. This lets the audience feel secure that you are indeed finished. They can then applaud or rush away or do whatever seems appropriate to them. The words "The End" scratched in sand or a shot of a sunset are both excellent ways to end a slide presentation (Fig. 10).

Evaluating the talk

Everyone's slide presentation needs evaluation from time to time. Although it is often difficult to give or accept criticism, friendly advice is essential, especially for beginners. An evaluation sheet may make this task less personal, and therefore easier, especially if criticism of a colleague is culturally unacceptable. The accompanying form is used in evaluating student slide presentations at the College of Forest Resources at the University of Washington (Fig. 11). The five subject areas have a total value of 100 points. Numbers at the right permit the evaluator to grade the program on a scale of poor to excellent (1 to 5). When you feel ready (preferably on your first talk), give a competent viewer a copy of this evaluation sheet. Study the gradings carefully and practice in private, trying to improve on those points where your score indicates weakness.

Attend the slide presentations of others and view these critically. Increased perception of the fine points of slide talk presentations will help you get the most from your own.

Grant W. Sharpe is a professor of Forestry and Outdoor Recreation at the University of Washington, Seattle, Washington, 98195/USA. He was one of the principal founders of the International Seminar on National Parks and Equivalent Reserves while teaching at the University of Michigan. Wenonah Sharpe is the co-author with her husband, Grant, of six National Park Wildflower Guides.

The Cleaning and Waterproof Coating of Masonry Buildings

The inappropriate cleaning and waterproofing of masonry buildings is a major cause of deterioration of historic resources. While both treatments may be appropriate in some cases, they may cause serious deterioration in others.

Why Clean?

The reasons for cleaning any building must be considered carefully before arriving at a decision to clean.

- Is the cleaning being done to improve the appearance of the building or to make it look new? The so-called "dirt" actually may be weathered masonry, not accumulated deposits; a portion of the masonry itself thus will be removed if a "clean" appearance is desired.
- Is there any evidence that dirt and pollutants are having harmful effects on the masonry? Improper cleaning can accelerate the deteriorating effect of pollutants.
- Is the cleaning an effort to "get your project started" and improve public relations? Cleaning may help local groups with short term fund raising, yet cause long term damage to the building.

These concerns may lead to the conclusion that cleaning is not desirable—at least not until further study is made of the building, its environment and possible cleaning methods.

What Is The Dirt ?

The general nature and source of dirt on a building must be determined in order to remove it in the most effective, yet least harmful, manner. Soot and smoke, for example, may require a different method of cleaning than oil stains or bird droppings. The "dirt" also may be a weathered or discolored portion of the masonry itself rather than extraneous materials. Removal of part of the masonry thus would be required to obtain a "clean" appearance, leading to loss of detail and gradual erosion of the masonry. Other common cleaning problems include metal stains such as rust or copper stains, and organic matter such as the tendrils left on the masonry after removal of ivy. The source of dirt, such as coal soot, may no longer be a factor in planning for longer term maintenance, or it may be a continuing source of problems. Full evaluation of dirt and its effect on the building may require one or several kinds of expertise: consultants may include building conservators, geologists, chemists, and preservation architects. Other sources of local experience or information may include building owners in the area, local universities, and state or national officials dealing with historic preservation.

If the proposed cleaning is to remove paint, it is important in each case to learn whether or not exposed brick is historically appropriate. Many buildings were painted at the time of construction or shortly thereafter; retention of the paint, therefore, may be more appropriate historically than exposing the brick, in spite of current attitudes about "natural" brick. Even in cases where unpainted masonry is appropriate,the retention of the paint may be more practical than removal in terms of long range preservation of the masonry. In some cases, however, removal of the paint may be desirable. For example, the old paint layers may have built up to such an extent that removal is necessary prior to repainting. It is essential, however, that research on the paint type, color, and layering be completed on the entire building before removal.

What Is The Construction Of The Building?

The construction of the building must be considered in developing a cleaning program because inappropriate cleaning can have a corrosive effect on both the masonry and the other building materials.

Incorrectly chosen cleaning products can cause damaging chemical reactions with the masonry itself. For example, the effect of acidic cleaners on marble and limestone generally is recognized. Other masonry products also are subject to adverse chemical reactions with incompatible cleaning products. Thorough understanding of the physical and chemical properties of the masonry can help you avoid the inadvertent selection of damaging cleaning materials.

Other building materials also may be affected by the cleaning process; some chemicals, for example, may have a corrosive effect on paint or glass. The portions of building elements most vulnerable to deterioration may not be visible, such as embedded ends of iron window bars. Other totally unseen items, such as iron cramps or ties which hold the masonry to the structural frame, also may be subject to corrosion from the use of chemicals or even from plain water (Fig. 1). The only way to prevent problems in these cases is to study the building construction in detail and evaluate proposed cleaning methods with this information in mind.

Previous treatments of the building and its surroundings also should be evaluated, if known. Earlier waterproofing applications may make cleaning difficult. Repairs may have been stained to match the building, and cleaning may make these differences apparent. Salts or other snow removal chemicals used near the building may have dissolved and been absorbed into the masonry, causing potentially serious problems of spalling or efflorescence. Techniques for overcoming each of these problems should be considered prior to the selection of a cleaning method.

Types Of Cleaning

Cleaning methods generally are divided into three major groups: water, chemical, and mechanical (abrasive). Water methods soften the dirt and rinse the deposits from the surface. Chemical cleaners react with the dirt and/or masonry to hasten the removal process; the deposits, reaction products and excess chemicals then are rinsed away with water. Mechanical methods include grit blasting (usually sand blasting), grinders, and sanding discs, which remove the dirt by abrasion and usually are followed by a water rinse. Problems related to each of these cleaning methods will be discussed later in this article.

Figure 1. The iron anchor shown here originally was hidden from view. An increase in volume due to rusting created internal pressures on the stone and brick, causing spalling. Careful study of the building construction can result in the identification of these potential problem areas and they can be taken into consideration while planning a cleaning project.

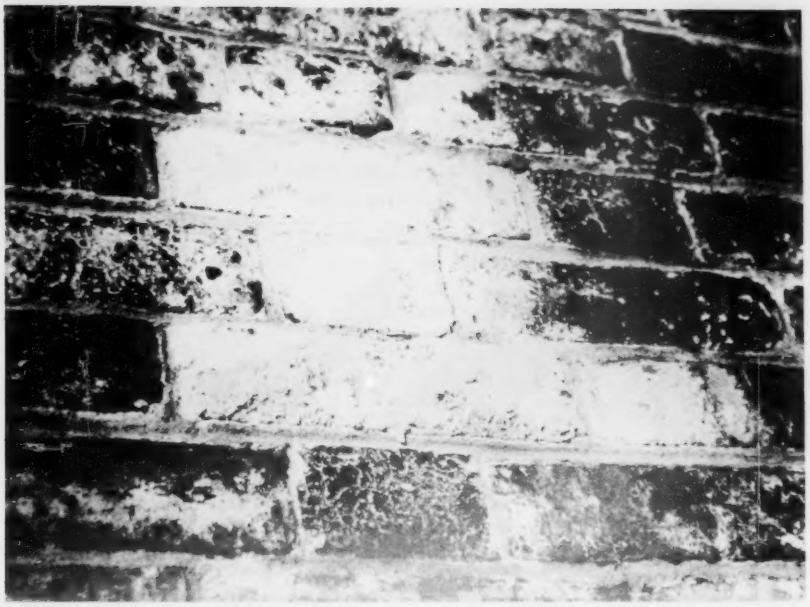


Figure 2. The white deposits are efflorescence, soluble salts deposited on the surface of the masonry. These salts usually originate in the masonry or mortar, migrate from the ground below through capillary action, or are brought in by air pollution. The salts also may be the result of chemical reactions resulting from selection of an improper cleaner.

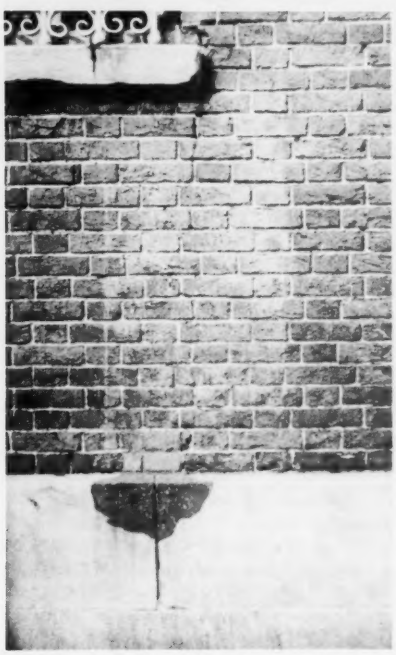


Figure 3. The hazy appearance of a portion of the brick is caused by a residue resulting from cleaning. This film occurred in spite of thorough rinsing. Test patches such as this should always be allowed to weather prior to continuing with the cleaning.

Planning A Cleaning Project

Once the existing conditions have been evaluated, including the type of dirt and the building materials, planning for the cleaning project can begin.

Environmental concerns: The potential effect of each proposed method of cleaning should be evaluated carefully. Chemical cleaners, even though diluted, may damage trees, shrubs, grass, and plants. Animal life, ranging from domestic pets to song birds to earth worms, also may be affected by the run-off. In addition, mechanical methods can produce hazards through the creation of airborne dust.

The proposed cleaning project also may cause property damage. Wind drift, for example, may carry cleaning chemicals onto nearby automobiles, causing etching of the glass or spotting of the paint finish. Similarly, airborne dust can enter surrounding buildings, and excess water can collect in nearby yards and basements.

Personal safety: The potential health dangers of each method proposed for the cleaning project must be considered, and the dangers must be avoided. Both acid and alkaline chemical cleaners can cause serious injury to cleaning operators and passers-by; injuries can be caused by chemicals in both liquid and vapor forms. Mechanical methods cause dust which can pose a serious health hazard, particularly if the abrasive or the masonry contain silica. Steam cleaning is hazardous because of high temperatures.

Testing cleaning methods: Several potentially useful cleaning methods should be tested prior to selecting the one for use on the building. The simplest and least dangerous methods should be included—as well as those more complicated. All too often simple methods, such as low pressure water wash, are not even considered, yet they frequently are effective, safe, and least expensive. Water of slightly higher pressure or with a mild non-ionic detergent additive also may be effective. It is worth repeating that these methods should be tested prior to considering harsher methods; they are safer for the building, safer for the environment, and less expensive.

The level of cleanliness desired also should be determined prior to selection of a cleaning method. Obviously, the intent of cleaning is to remove most of the dirt. An appearance as new, however, may be inappropriate for an older building, and may require an overly harsh cleaning method. It may be wise, therefore, to determine a lower level of acceptable cleaning. The precise amount of residual dirt considered acceptable would depend upon the type of masonry and local conditions.

Cleaning tests, whether using simple or complex methods, should be applied to an area of sufficient size to give a true indication of effectiveness. The test patch should include at least a square yard, and, with large stones, should include several stones and mortar joints. It should be remembered that a single building may have several types of masonry materials and similar materials may have different surface finishes; each of these differing areas should be tested separately. *The results of the tests may well indicate that several methods of cleaning should be used on a single building.*

The cleaning budget should include money to pay for these tests. Usually contractors are more willing to conduct a variety of tests if they are reimbursed for their time and materials, particularly if the tests include methods with which the contractor is not familiar.

When feasible, test areas should be allowed to weather for an extended period prior to evaluation. A waiting period of a full year is not unreasonable in order to expose the masonry to a full range of seasons. For any building which is considered historically important, the delay is insignificant compared to the potential damage and disfigurement which may arise from use of an incompletely tested method (Figs. 2–5).

Potential Problems Of Cleaning

Water Cleaning: Water cleaning methods include: (1) low pressure wash over an extended period, (2) moderate to high pressure wash, and (3) steam. Bristle brushes frequently are used to supplement the water wash. All joints, including mortar and sealants, must be sound in order to minimize water penetration to the interior.

Porous masonry may absorb excess amounts of water during the cleaning

process and cause damage within the wall or on interior surfaces. Normally, however, water penetrates only part way through even moderately absorbant masonry materials.

Excess water also can bring soluble salts from within the masonry to the surface, forming efflorescences (Fig. 2); in dry climates, the water may evaporate inside the masonry, leaving the salts slightly in back of the surface. The damage which can be caused by soluble salts is explained in more detail later in this article. Efflorescence usually can be traced to a source other than a single water wash.

Another source of surface disfigurement can be the chemicals such as iron and copper salts in the water supply; even "soft" water may contain deleterious amounts of these chemicals. Water methods cannot be used during periods of cold weather because water within the masonry can freeze, causing spalling and cracking. Since a wall may take over a week to dry after cleaning, no water cleaning should be permitted within several days prior to the first average frost date, or even earlier if local forecasts predict cold weather.

In spite of these potential problems, water methods generally are the simplest to carry out, the safest for the building and the environment, and the least expensive.

Chemical cleaning: Since most chemical cleaners are water based, they have many of the potential problems of plain water. Additional problems of chemical cleaning agents have been mentioned in the discussion of environmental concerns.

Chemical cleaners have other problems as well. Some types of masonry are subject to direct attack by cleaning chemicals. Marble and limestone, for example, are dissolved easily by acidic cleaners, even in diluted forms. Another problem may be a change in the color of the masonry caused by the chemicals, not by removal of dirt: the cleaner also may leave a hazy residue in spite of heavy rinsing (Fig. 3). In addition, chemicals can react with components of mortar, stone, or brick to create soluble salts which can form efflorescences, as mentioned earlier. Historic brick buildings are particularly susceptible to damage from hydrochloric (muriatic) acid, although it is, unfortunately, widely used on these structures.

Mechanical Cleaning: Grit blasters, grinders, and sanding discs all operate by *abrading the dirt off the surface* of the masonry, rather than reacting with the dirt and masonry as in water and chemical methods. Since the abrasives do not differentiate between the dirt and the masonry, *some erosion of the masonry surface is inevitable with mechanical methods, especially blasting.* Although a skilled operator can minimize this erosion, some erosion will still take place. In the case of brick, soft stone, detailed carvings, or polished surfaces, even minimal erosion is unacceptable (Figs. 4 and 5). Brick, a fired product, is hardest on the outside where the temperatures were highest; the loss of this "skin" of the brick exposes the softer inner portion to more rapid deterioration. Abrasion of intricate details causes a rounding of sharp corners and other loss of delicate features, while abrasion of polished surfaces removes the polished quality of stone. Mechanical methods, therefore, should never be used on these surfaces and should be used with extreme caution on others.

Grit blasting, unfortunately, still is widely used in spite of these serious effects. In most cases, blasting will leave minute pits on the surface of the masonry. This additional roughness actually increases the surface area on which new dirt can settle and on which pollutants can react.

Mortar joints, especially those with lime mortar, also can be eroded by mechanical cleaning. In some cases, the damage may be visual, such as loss of joint detail or increased joint shadows. Joints constitute a significant portion of the masonry surface (up to 20% in a brick wall) so this change should not be considered insignificant. In other cases, however, the erosion of the mortar joint may permit increased water penetration, leading to the necessity for complete repointing.

Figure 4. Sandblasting has rounded the corners of the marble capital and pitted the formerly smooth surface. Not only is the stone harmed visually, the increased roughness of the surface also will collect new dirt more quickly than smooth stone.

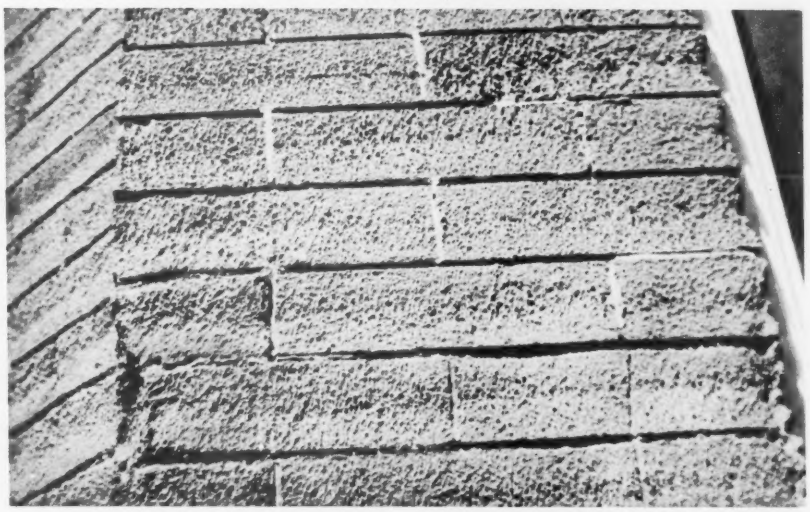


Figure 5. This brickwork was sandblasted to remove paint. Note the severe erosion which has occurred, especially in the softer center sections of this "hard burned" late 19th-century brick. Although this is a severe example, the same problem of increased roughness and porosity will occur even on more skillfully performed jobs where the effect is less evident visually.

Other problems of mechanical methods have been mentioned in the discussion of project planning. In addition, wet blasting or water rinses can create the potential hazards of water methods.

Problems Of Water Repellent And Waterproof Coatings

Is waterproofing necessary?. Coatings frequently are applied to historic buildings without concern for the requirement or the consequences of the coating. Most historic buildings have survived for years without coatings, so why are they needed now? Water penetration to the interior usually is not caused by porous masonry but by deteriorated gutters and downspouts, deteriorated mortar, capillary moisture from the ground (rising damp), or condensation. Coatings will not solve these problems. In the case of rising damp, in fact, the coatings will allow the water to go even higher because of the retarded rate of evaporation. The claim also is made that coatings keep dirt and pollutants from collecting on the surface of the building thus reducing the requirement for future cleaning. While this at times may be true, at other times the coatings actually retain the dirt more than uncoated masonry. More important, however, is the fact that these coatings can cause greater deterioration of the masonry than that caused by pollution, so the treatment may be worse than the problem one is attempting to solve.

Types of coatings: Masonry coatings are of two types: water*proof* coatings and water *repellent* coatings. Waterproof coatings seal the surface from liquid water and from water vapor; they usually are opaque, such as bituminous coatings and some paints. Water repellents keep liquid water from penetrating the surface but allow water vapor to enter and leave through the "pores" of the masonry. They usually are transparent, such as the silicone coatings, although they may change the reflective property of the masonry, thus changing the appearance.

Waterproof coatings: These coatings usually do not cause problems as long as they exclude *all* water from the masonry. If water does enter the wall, however, the coating can intensify the damage because the water will not be able to escape. During cold weather this water in the wall can freeze, causing serious mechanical disruption, such as spalling. In addition, the water eventually will get out by the path of least resistance. If this path is toward the interior, damage to interior finishes can result; if it is toward exterior cracks in the coating, it can lead to damage from the build-up of salts as described below.

Water repellent coatings: These coatings also can cause serious damage, but by a somewhat different mechanism. As water repellent coatings do not seal the surface to water vapor, it can enter the wall as well as leave the wall. Once inside the wall, the vapor can condense at cold spots, producing liquid water. Water within the wall, whether from condensation, leaking gutters, or other sources, can do damage, as explained earlier.

Further damage can be done by soluble salts. Salts frequently are present in the masonry, either from the mortar or from the masonry units themselves. Liquid water can dissolve these salts and carry them toward the surface. If the water is permitted to come to the surface, efflorescences appear upon evaporation. These are unsightly but usually are easily removed; they often are washed away by the simple action of the rain.

The presence of a water repellent coating, however, prevents the water and dissolved salts from coming completely to the surface. The salts then are deposited slightly behind the surface of the masonry as the water evaporates through the pores. Over time, the salt crystals will grow and will develop substantial pressures which will spall the masonry, detaching it at the depth of crystal growth. This build-up may take several years to become apparent.

Test patches for coatings generally do not allow an adequate evaluation of the treatment, because water may enter and leave through the surrounding untreated areas, thus flushing away the salt build-up. In addition, salt deposits may not cause visible damage for several years, well after the patch has been evaluated.

This is not to suggest that there is never a use for water repellents or waterproofings. Sandblasted brick, for example, may have become so porous that paint or some type of coating is essential. In other cases, the damage being caused by local pollution may be greater than the potential damage from the coatings. Generally, coatings are not necessary, however, unless there is a specific problem which they will help to solve. If the problem occurs on only a portion of the masonry, it probably is best to treat only the problem area rather than the entire building. Extreme exposures such as parapets, for example, or portions of the building subject to driving rains, can be treated more effectively and less expensively than the entire building.

This article was adapted from Preservation Briefs No. 1, 1975, written by Robert C. Mack, AIA, Architect, Technical Preservation Services Division, Office of Archeology and Historic Preservation, U.S. National Park Service.

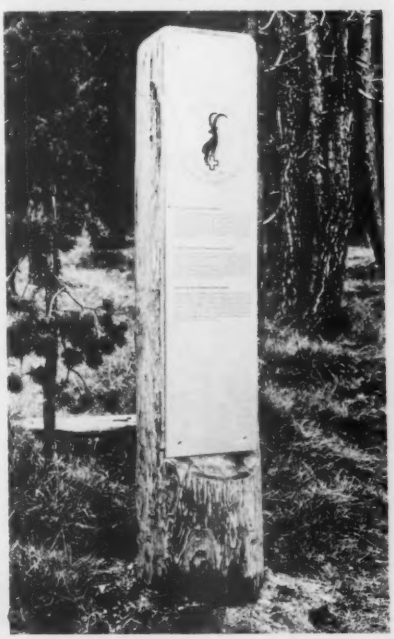
Sign Posts

Heavy logs, tall stumps or posts can be highly effective for signs.

The Swiss sign shown below carries its message in three languages on a metal plate.

A simpler message, at right, was carved into the flat vertical surface with a hand router, then painted for greater visibility.

Horizontal surfaces should be cut at an angle to shed water and underground parts treated against rot and insects.



Game Viewing Structures in Malawi

Special structures from which park visitors can watch wild animals or birds without disturbing them are important facilities in many parks and reserves.

The following design for a game viewing hide, or "blind" as it would be called in some parts of the world, was developed by the National Fauna Preservation Society of Malawi. G.D. Hayes, officer in charge of the Lengwe National Park, who sent this information, says that three of these structures are now in operation and a fourth will be added this year.

The basic design has proved to be very successful. All hides are similar except for height, which varies according to requirements. At Lengwe, the highest platform is 10 feet above ground level.

The hides are of simple post and beam construction. The platform is 8 feet by 16 feet (2.44 m x 4.88 m) bolted to poles (posts) of 6-inch diameter (15.24 cm) which are sunk some 2 feet (60 cm) into the ground. These poles are not set in concrete. They are thoroughly treated with solignum and "a heavy dressing of dieldrin" is poured into the holes before the poles are erected, and the holes are filled and tamped. All woodwork, in addition to the poles, is treated against termites.

Beams are 4-x 5-inch (roughly 10 x 13 cm) timbers. They are fastened to the poles with ½-inch (1.27 cm) bolts. Floor joists are also 4-x 5-inch timbers, and nine are used in this design. The floor and ladder landing platform are made with 1-x 6-inch (2.5 x 15.24 cm) boards.

Walls are 6½ feet (2 m) from floor to ceiling beams. They are framed with 2 x 3-inch (5.08 x 7.62 cm) timbers, and a 10-inch (25 cm) viewing slit is left open on the viewing side. Above and below the viewing slit the front wall is covered with ½ x 6-inch (1.27 x 15.24 cm) boards, mounted vertically. End walls are similarly boarded, from floor to safety rails, and in the peak spaces above the sun shades. The rear wall is covered with 1-inch (2.5 cm) wire netting and hessian (burlap) to prevent the animals from seeing through the structure.

Safety rails on the back and side walls, are of 2- x 3-inch timbers, with wire netting nailed in as additional protection. Safety rails on the ladder and landing platform are also 2 x 3 inch timbers.

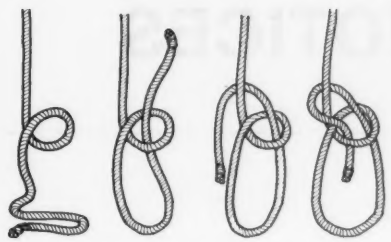
The roof is a simple "A" frame covered with wire netting and thatch. Sun shades 20 inches by 8 feet (50 cm x 2.44 m) are fastened at the top of the end walls.

Mr. Hayes says that the four waterholes, which the present and planned hides overlook, attract the park animals from about the beginning of June. However, from August to mid-October there is no water in the park except at the waterholes, which are maintained by pumped water when necessary. Game viewing is especially successful during these months.

Traffic Control

Petersburg National Battlefield NPS Photo: R. Frear

Knots You Should Know



Of the hundreds of knots, bends and hitches men have learned to make and use over the centuries, one of the most useful—beyond any question— is the bowline. Often called the sailor's best friend, this knot won't slip, and yet it unties easily, even after a heavy strain has been put on it.

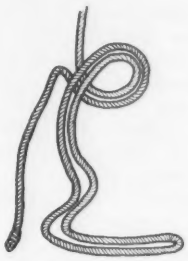
Its uses are virtually countless. Wherever a closed loop is needed on the end of a line, or in it, the bowline usually can provide it.

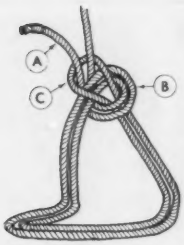
The *Bowline* is easily tied, as follows: 1) Make a loop in the standing part. 2) pass the short end up through the loop. 3) pass the short end behind the standing part and . . . 4) . . . back through the loop. Pull it tight and the knot is tied.

There are many variations of the bowline. A number of them are useful for park personnel to know, particularly for rescue work. Several of these variations permit the knot to be tied anywhere along the length of a long rope where the non-slipping loop (or loops) may be needed. Examination of the following drawings show how these bowline variations are made. Perceptive park personnel will be able to envision various uses in the field.

The first variation is the *Double Bowline*. This can be tied into a long line or on the end. In simple resuce work, for example, the large loops (A) could be placed around a man's legs to form a kind of seat, and the end loop (B) could be placed around his shoulders and back as a safety line.

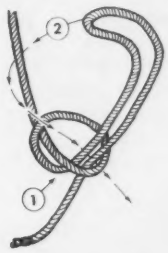
The Double Bowline is made the same way as the Bowline except that the rope is doubled. For the finished knot, the loops (marked A and B in the drawing on the right) can be as large as needed.





Another variation is the *Bowline on a Bight*. This knot provides a double loop. If the short end (A) is left long enough it could be used for extra lashing, or to make a safety harness if a person were being lifted or lowered in the loops.

Start this knot as you would a single bowline, carrying the short end (A) back around the initial loop (B) and through the bight (C).

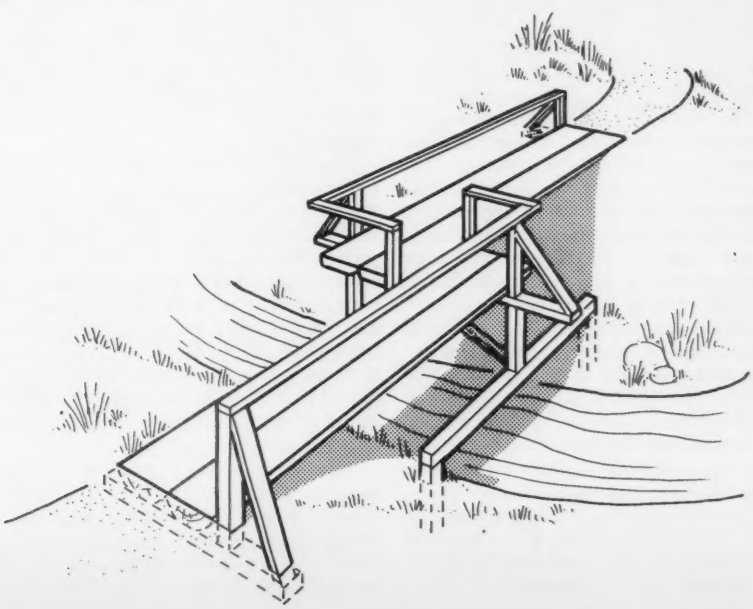


Another variation is the *Bowline with a Bight*. This knot is more difficult to tie. It provides a single loop anywhere along a line.

Make the usual loop (1), then pull a bight (2) up through it, around behind the standing part and back down through the loop (1). Pull all snug and the knot is tied.—*R.I. Standish*

Offset Bridge

Where bicyclists, horseback riders, or off-the-road vehicles have become a nuisance on footbridges, adaptations of this idea could help solve the problem.



BOOKS & NOTICES

Interpreting the Environment. Edited by Grant W. Sharpe. John Wiley, New York, 1976. 582 pages, US $14.95 plus postage.

"For nearly a generation, [interpretation] has been guided conceptually and philosophically by . . . . . Tilden through his classic *Interpreting Our Heritage*. But until now no single volume has addressed itself to the need to make plain how interpretation is applied on a day-to-day working basis." (p. xi). Prof. Sharpe's book succeeds admirably in filling this gap.

Sharpe edited the work of 19 other contributors in addition to writing 6 chapters himself. Of the 20 authors, 18 are presently inolved with interpretation in the U.S., one is with an Australian agency, and one, whose experience is American, is working abroad with a UN agency.

Six chapters are devoted to "The Interpretive Process" followed by ten chapters on "The Techniques of Interpretation". Eight chapters deal with "Supporting Activities" such as buildings, photography, and collections. Finally, there are two chapters on "Professional Development" and one which presents an overview of "Interpretation Around the World". Two extremely valuable features of the book are the extensive lists of references following each chapter and the very thorough index.

The book is intended to appeal to persons involved in many different aspects of interpretation, "both to beginning interpreters . . . . . and to 'old hands' . . . " (p. xiii). Much of the material is of interest also to interpreters in historical settings as well as to those in natural settings. Indeed some material, such as the chapter on Living Interpretation, is aimed specifically at historical/cultural interpreters.

Much of the book is of value to relatively inexperienced interpreters whose jobs involve actual contact with the public. The chapters on personal services contain a wealth of ideas for those whose responsibilities include information duty, conducted activities, interpretive talks, and living interpretation or animation.

There is as much or more, however, for the experienced interpreter who is involved less in public contact and more in design and management of an interpretive program. Firstly, this interpreter is frequently responsible for training others who *do* communicate directly with the public. In designing a training program, the interpretive manager too, will gain much from the chapters on personal services as well as from sections on "In-Service Training" and "Quality Control".

Next the interpreter wishing to assess the relative merits of various interpretive media such as self-guiding trails, exhibits, signs and publications will find the chapters on non-personal services especially useful. The person responsible for establishing a totally new program will benefit in particular from the discussions on basic physical plant, on filing systems for collections, photographs, etc.; and on production of such items as signs, publications, and audio stations. These sections should help the interpretive manager to deal effectively with other specialists such as architects, engineers, designers and printers.

Several sections of the book should be of considerable interest to park administrators as well as to interpretive managers. There are valuable ideas on hiring of interpretive staff, particularly in Sharpe's section on "Personnel" and P. Risk's section on "Employee Selection" (pp. 125–126, 505–507). Administrators will also be interested in the emphasis placed upon the importance of grounding an interpretive program firmly in policy and in the organizational structure of an agency.

One criticism concerns the book's failure to focus sharply on interpretation. Instead it drifts off at times into explanatory material relating to the subject matter being interpreted. For example, the editor himself deals at some length with explanations of various marine phenomena, such as waves and tides, in a section entitled "The Marine Environment" (pp. 444–455). He moves on to "Interpreting the Marine Environment" (pp. 455–468), but the former material would be more appropriate in an introductory text on oceanography.

Finally, some mention of the international perspective of the book is in order. "The purpose of this book is to share ideas with managers, planners, and interpreters of parks . . . . not just in North America, but on all continents." (p. xiii). Thus the book attempts to discuss the field of interpretation in a general way in order that the material might be equally valuable for Americans and for interpreters elsewhere. The attempt is largely but not entirely successful.

For example, the initial chapter, providing "An Overview of Interpretation" reflects very much the American scene. It views the present situation of interpretation in the context of domestic issues such as equal rights for females and the "ecology movement" (pp. 10, 11, 20). The detailed enumeration of various federal and state programs and of curricula of selected American institutions is a further case in point (pp. 33–38), as is reference to the National Environmental Policy Act (sic, p. 59).

In the final chapter, M. Sutton assesses the state of interpretation elsewhere and is perhaps overly influenced by the American experience. The slide show is traditionally an important element in American interpretive programs and its status elsewhere is discussed at some length. In contrast, the sound-and-light program, which is essentially a European genre, is mentioned only in passing (p. 536). Further discussion of approaches such as this would have provided a more balanced picture of interpretation beyond the U.S. and would also have made the discussion of greater value for American readers who are likely to be less familiar with techniques used elsewhere.

Yet the preponderance of the American experience is entirely understandable. The national park idea is an American innovation and development which has spread to much of the world. And within the American system of national parks can be found many of the roots of interpretation.

In sum, the criticisms are minor, the book fulfilling admirably its stated purpose. It will be of great practical value to all who work in the widely varying aspects of interpretation. The authors point with pride to interpretation's past accomplishments and are confident that it will assume even more importance in the future. The appearance of this book is itself yet another indication that interpretation has come of age.–*Ronald G. Seale, Parks Canada*

Hunting Banned in Kenya

The following statement was released by the Kenya Government on May 19, 1977:

"Government has decided to ban all hunting in Kenya with immediate effect. All hunting licenses are, therefore, cancelled forthwith. This applies to all individual hunters, professional hunters and companies holding hunting concessions. Persons and or companies currently holding hunting concessions together with other professional hunters will now turn their hunting safaris to photographic safaris, but they must apply immediately for the new photographic licenses if they wish to do so. Nobody will be allowed to come into Kenya or enter any rural area of the country with firearms or any weapons for the purpose of hunting. All areas (sic) will now be converted for photographic safaris. The Firearms Bureau is instructed to cancel all licenses for firearms related to hunting with immediate effect. Officers of the Wildlife Conservation and Management Department, the Police and all law-enforcement officers throughout The Republic are instructed to implement this government order with immediate effect and stop all hunting activities from today."

It was also reported that the Minister for Tourism, Mathews Ogutu, called the ban total and of indefinite duration. Hunting on privately-owned land is forbidden as animals belong to the government, the report added.

Further action by Kenya is reported to include expansion of official anti-poaching forces, and a ban on trade in such animal products as illegally taken skins and ivory.

As it tumbles down from the side of La Soufrière, the warm and sulpherous Carbet River makes three impressive waterfalls in its short course to the sea. This is the second falls, 110 m.

Back Cover: La Soufrière, Guadeloupe's active volcano, at 1467 m is the highest point in the Lesser Antilles. Most of the time La Soufrière sleeps, but she wakened in 1798, 1836, 1956 and, of course, in 1975.

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